

A
Compleat Body
OF
Chirurgical Operations,
Containing
The Whole Practice
OF
SURGERY.
WITH
OBSERVATIONS and REMARKS
on each Case.

Amongst which are Inserted, the several Ways
of Delivering Women in Natural and Unna-
tural Labours.

The whole Illustrated with Copper Plates, Explai-
ning the several Bandages, Sutures, and divers use-
ful Instruments.

By M. de La Vanguion. M. D. and Intendant of
the Royal Hospitals about *Paris*.

The Second Edition.

Faithfully done into *English*.

L O N D O N,

Printed for R. Bonwick, J. Tonson, W. Freeman, Tim. Goodwin,
J. Walthoe, M. Wotton, J. Nicholson, T. Newborough, B.
Took, S. Manship and R. Parker. MDCCVII.



T H E
P R E F A C E.

CHirurgery or Surgery (as we shall write it in compliance with the present usage) is an Art which instructs us how to cure a Multitude of Diseases incident to the Bodies of Men, by the help of Manual Operation. This is one of the three principal Members of the Art of Physick, without which it would be lame and imperfect; and however Custom has made it a separate Art, and a sort of Inferiour Employment; yet it is evident it does not require less Study, Application, and Knowledge, than the other Parts of Medicine, and in many Respects, for the Certainty and Expedition of the Cure, deserves to be preferred before them. Many Distempers indeed are conquered by a Regular Diet, and the assiduous Use of proper Internal Remedies; but on the contrary, there are others which are invincible by any milder way, and require the use of Instruments and external Applications, which alone are capable of giving certain and effectual Relief to the languishing Patient.

The P R E F A C E.

The Invention of Surgery is ascribed to Æsculapius, whose two Sons Podalirius and Machaon, are celebrated by Homer for their rare Skill and Dexterity, and the great Services they did in curing the wounded Men in that famous Expedition against Troy. Chiron and his Pupil Achilles are extolled for their extraordinary Knowledge of Simples, insomuch that Ulcers which require the Skill of a finishd Surgeon to cure them, are still called Chironia, and that Plant with which Achilles is reported to have cured Telephus after he had wounded and defeated him, still bears the Name of Sideritis Achillæa. But the first who has committed any thing of this kind to writing, was the Great Hippocrates the seventeenth in Descent from Æsculapius, whose Chirurgical Pieces of Fractures, Of the Articulations, Of reducing Bones by Machines, Of Wounds in the Head, &c. are not esteemed by the learned World, inferiour to any of his Writings in the other Parts of Medicine. After this great Man several of his Country-men made Improvements, and this Art for a Series of many Ages, seemed as it were confined to the Natives of Greece. The next who applied themselves to improve the Instruments and Operations of Surgery,
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were the Arabians, of which the Writings of Albucasis, and some portions of Avicenn are the only Remains. In the last place, about two or three Centuries, or since it was introduced into Europe by Guido de Cauliaco, Joannes de Vigo, &c. who ought justly to be accounted the Fathers of the Modern Surgery; but as yet it was rude and imperfect till Ambrose Parry, Fab. Hildanus, Fab. ab Aquapendente, &c. by their successful Labours advanced it to a higher pitch than their Predecessors; however it was impossible but it must be deficient for want of the later Discoveries in Anatomy, and since that Science has been cultivated, and the Structure of Humane Bodies in many particulars better known, Surgery has necessarily received great Advantages. Since this new Light has been introduced (which has made the productions of a few Years exceed those of many preceding Ages) no Nation has been more Industrious to bring Surgery to perfection than the French; and this is owing almost entirely to the Master Surgeons of the School of St. Cosmus, who have applied themselves with the last Diligence, to instruct every Member of their Body in all parts of an Art which is of so great Use and Importance to Mankind.

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But our present Design is not to set forth the Nature or Excellence of this Art, or give a History of the Degrees by which it has been perfected; and therefore we shall content our selves with giving the Reader an Account of the Volume we here present him with, and informing him what he may expect to find in it. Antiquity has produced many excellent Pieces; but the great Discoveries in the Humane Microcosms, have opened a large Field for Improvements, and the New Philosophy has furnished us with more sensible Accounts, than the Obscure and Uncertain Principles of the Ancients could possibly assist us to find out. This is so evident and clear, that it is a surprizing Thing, that Surgery should not be earlier advanced by it, and all along till very lately, the old beaten Path trodden without any regard to the Modern Inventions. Our Author has reformed this in a great Measure in the following Work, in which he has presented the Reader with such Instructions for performing the Operations, and such Reasons for the Accidents which attend them, as are agreeable to the Structure of the Parts, and the New Doctrines in Philosophy. The whole Volume is an entire System, which contains all the Operations in the Practice of Surgery, and the
Different

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Different manners of Performing them now in Use, and they are all delivered in a most exact order. For instance, in the first place he premises the Definition, for the giving his Reader a Succinct Account of the Subject under his consideration; Then he explicates the Nature and Cause of the Disease which he grounds on the Structure of the Part, and this enables the Artist to give a Rational and Satisfactory Account of what he proposes to perform, by this means to distinguish himself from Empirick or Ignorant Mechanick, who can give no other Reason, than the Practice of his Master. In the next place he delivers the Signs, as well those which serve to detect the Nature of the Disease, as those which assist the Surgeon to make a just Prognostick of the Event. After these necessary Premises, he proceeds to the Operation it self, in which he gives Instructions extending even to the most minute Circumstances which can happen, to this he subjoyns the Dressings, several sorts of Bandages, and so proceeds through the whole Method of treating the Patient, prescribing in every Case a proper Regimen, and Medicaments to compleat and perfect the Cure. In the last place, which is not the least curious of the whole, he adds

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a great number of extraordinary and instructive Observations, extracted out of the Writings of Kerkringius, Bartholine, the German Transactions, and other Authors, but principally from Fabricius Hildanus, whose Merit is acknowledged by all knowing Judges. In short, to avoid any farther expatiating on particulars, whoever shall peruse this Piece with Care from beginning to end, will find an ample Collection of useful and solid Knowledge. But I shall not undertake to pre-engage the Readers Favour, but rather chuse to abandon this Work to his impartial Censure, and leave him to the Liberty to embrace what he finds in it agreeable to Reason and Experience, and to reject the rest.



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A
COMPLEAT BODY
OF
Chirurgical Operations.

CHAP. I.

Of Operations in general.

AN Operation is the Industrious and Methodical Application of the Surgeons Hand, to the Parts of a Humane Body, to restore them to their Natural State.

There are Five Species of Operations, *Synthesis*, *Diæresis*, *Exæresis*, *Taxis* and *Prothæsis*, [or Uniting, Dividing, Extracting, Reducing, Supplying.]

Synthesis is the dexterous reuniting Parts divided, as Wounds by the help of Sutures.

Diæresis is dividing with judgment Parts which require division, as the opening Abscesses.

Exæresis is the Artful extracting extraneous Bodies, or any noxious Substance, as Bullets, Matter, &c.

Taxis is Restoring to their Natural Site Parts displaced, as the Guts fallen into the Scrotum.

Prothæsis is the adding by Art and Industry useful Parts deficient, as Artificial Legs and Arms. This last is not properly termed an Operation.

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Sometimes several of these concur, *viz.* in an Abscess where an aperture is made, the Pus let out, the parts reunited, and the whole incarned.

The CAUSE of Operations are Diseases incurable, except by an industrious Application of the Hand. Thus Parts mortified, Bones very much shattered, require Amputation, Extravasated Blood on the Brain, the Trepan, the Strangulation of the Gut in the Scrotum, the Bubonocoele, with an infinity of the like nature amply treated of in this Course of Operations.

The SIGNS which instruct the Surgeon in what cases an Operation is necessary, are taken from the various Diseases to which Humane Bodies are subject, and shall be distinctly delivered in treating of each particular.

In each OPERATION it is necessary to know what is to be done *Before, At the time of performing it, and After it is over.* Before the Operation, all necessaries must be provided for the well performing it. During the making it, all the Rules prescribed must be carefully observed, and After it, Care must be had for the perfecting the Cure.

Farther there are four Things to be regarded, *Of what Nature the Operation is, For what Reason it is attempted, If Necessary and Possible, and the Manner of performing it.* The First may be learnt in the Definition. The Second from considering the Nature of the Disease incurable by other means. The Third must be determined by comparing the Disease, the Strength and Constitution of the Patient, and the Part affected. The Last is fully delivered in the Rules of Art, prescribed in their proper places.

If the Operation can be deferred, it is best to wait for the most favourable Season, *Spring, Autumn, Winter* and *Summer* having all different Advantages conducing to a happy Cure.

The *Spring* puts new life into the Blood and Spirits center'd by the Winters Cold, raises a kind Fermentation, and exalts them to the Surface of the Body.

The *Autumn* sweetens and calms the Blood, grown sharp and sour by the loss of its Spirituous and Balsamick Parts, dissipated by the immoderate Heats of the Summer.

The *Winter* closes the Pores, obstructs Transpiration, abates the Circulation, which has scarce vigour enough to animate the Parts.

PROPER DRESSING must be applyed on the part after the Operation is finished, the Neatness of which is a great



great comfort to the Patient, by perswading him he is in the Hands of an able Surgeon. This sets his mind at ease, and Nature advances the Cure more equally. At the end of each Operation, the Reader may find an exact Method of Dressing.

The CURE varies according to the different Operations, to which we shall remit the Reader.

THE REMARKS annexed to each Operation, we hope will be useful to those who peruse them; They are extracted out of the Best and most Famous Practitioners of Europe, especially *Fabricius Hildanus*, a Person of well known Merit, and highly valued by all Physicians and Surgeons. Among other of whose Observations this is one, *Cent. 4. Obs. 59.* A certain Big-bellied Woman in her eighth Month, received a Gun-shot Wound on the right Thigh, not with any Bullet, but a Peller of chew'd Paper only, which enter'd the Muscles a Fingers length. The Child in the Womb was so much affected with the Blow, that it dyed instantly; some time after the waters in which the *Fetus* ordinarily swims, made their way. The succeeding Day the Woman was delivered of a Child, Dead, Black, Flabby and Stinking: After some time she began to recover, and the Wound was compleatly healed in 24 Days.

CHAP. II.

Of the Sutures.

Suture is a stitching of Wounds, to help their Reunion.

There are three Kinds of Sutures, *Incarning, Restraining* and *Conservative*.

The *Incarning* have their Stitches separate.

The *Restraining* have their Stitches continuous.

The *Conservative* are such as are made in Great Wounds, to prevent deformity.

The *Incarning Sutures* are the *Interrupted*, the *Quilled*, the *Twisted*, the *Clasping* and the *Dry Suture*.

The *Restraining* made to stop a flux of Blood, are the *Glovers*, the *Schoemakers*, the *Tailors*, that from without inwards, that from within outwards, that of *Celsus* made in form of a Cross.

* There are but four kinds of Sutures necessary, the *Interrupted*, the *Twisted*, the *Dry*, and the *Glovers Suture*, the others are useless and prejudicial, the Figure of which nevertheless I have annext, in the Plates at the end of this Work, to gratifie the Curious.

The *C A U S E* of Sutures are *Wounds Recent*, or Divisions of the soft Parts from some external Cause.

Wounds are *Simple* or *Complicate*. *Simple Wounds* are a bare division of the *Flesh*, not accompanied with any ill Accident. On the contrary,

Complicate Wounds are such as are attended with diverse Accidents, as Pain, Inflammation, Contusion, loss of Substance, &c.

THE DIAGNOSTICK SIGNS. In *External Wounds* the Division of the *Flesh* is visible, but *Internal* are not so easily discovered.

If a Wound penetrate the *Breast*, and the Patient bring up Blood in Coughing, you can hear the Air come out of the Wound in expiration, it is a sign the *Lungs* are wounded, and the Vessels hurt.

If there be a plentiful effusion of blood from the *Breast*, and the push is directed towards the *Heart*, there is ground to fear that important Organ is hurt.

If the Blood which comes from it be Hot, Black and Boiling, it is probable the *Right Ventricle* is hurt, but if it be of a Florid Scarlet colour and Frothy, it is the *Left Ventricle* which has received the Thrust.

When the *Heart* is wounded, the Arteries beat feebly; the Face turns pale, the Extreame Parts grow chill, and the whole Body is covered with a cold Sweat.

If the *Diaphragm* be wounded, the Patient can scarce breathe, feels a great pain in the Back, Shoulders and Arms.

If the *Spinal Marrow* be hurt, the Nerves are relaxed, all Sense lost, sometimes the Seed and Urine come away involuntarily.

If the *Aspera Arteria* be hurt, the Patient spits Blood, has a great pain towards his Back, the Voice becomes Hoarse, and the Tongue Dry.

* See all the several Kinds of Suture or Stitches, from Pl. 97, to 83.

of Chirurgical Operations.

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If the *Guts* are hurt and the wound be small, there happen Syncope, Inquietude, Convulsions and Fever. If the Patient vomit or void blood by Stool, or the *Fæces* come forth, it is certain the wound is large.

If the Thrust be in the Belly, and there happen a plentiful effusion of Blood, it is a sign the *Great Artery* or *Vena Cava* is cut.

When the *Stomach* is wounded, the Patient has cutting Pains, Bilious Vomiting, Cold Sweats, the Hiccough, loses all Appetite, and the Aliment comes forth of the wound, if it be very large.

If the wound be on the right Side a little above the Navel, and penetrates far in, and something obliquely towards the Bastard Ribs, and black Blood come plentifully from the Wound, the Party wounded feels great pain in these Parts, vomits Bile, and lies on his Belly more commodiously, than in any other posture, you may pronounce, the *Liver* is wounded.

If the wound be on the left Side deep, and near the Seat of the Spleen, and a black Blood issue from it, it is a sign the *Spleen* is hurt.

In wounds of the Kidneys, the Patient pisses with great Difficulty; the Urine is Bloody, and a pain is felt in the Groin.

When the *Sphincter of the Bladder* is hurt, the Urine flows out involuntarily; and if its Bottom, it comes out in the Belly, and through the Orifice.

There is reason to fear, the *Brain* and its *Meninges* are Hurt, when the fracture of the Skull is of a large extent, the Eyes are Swollen and full of Pain, the Face is red and inflamed, the Patient is *Comatose*, a Fever is kindled, with a hard Pulse, shaking Fits frequently recurring, and Vomitings: He voids Blood by the Nose, Mouth or Ears. The Excrements and Urine come away involuntarily, and a Syncope, Vomitings, Convulsion, Delirium, Lethargy and Apoplexy ensue. The Lungs and the Liver Apostemate, which is discovered by a fixed Pain on the sides of the Breast, or the Region of the Liver, or by frequent Rigours. All or several of these signs concurring, are sufficient to shew the Brain is hurt.

When the *Nerves* are hurt, Inflammation, Pain and Convulsion ordinarily succeed.

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* **THE PROGNOSTICK SIGNS.** *Wounds of the Head* are most commonly Dangerous, by reason of the nicety of the Brain and its Membranes, which seldom escape alteration, when the Head is wounded.

Great Wounds of the Dura-Mater are Mortal, because of the division of its Blood-vessels, but if the *Wound be small and remote from the Sinus's* or principal Vessels, the Patient may well enough escape.

† *Wounds in the Spine of the Neck, Aspera Arteria and Oesophagus,* are Mortal: Those in the Blood-Vessels and Nerves are dangerous, it being difficult to stop the Blood, if the wound be large.

Wounds of the Breast are not very dangerous when they are external, but if they penetrate, there is much to be feared upon the score of the Lungs and Heart.

Wounds which penetrate the Ventricles of the Heart are Mortal, and the great Flux of Blood instantly kills the Patient, but if the wound be near its Cone, the Patient may live several Days. *Wounds of the Pericardium* are Mortal, as well as those of the Lungs. And so are

Wounds of the Thoracick Duct and Receptacle of the Chyle, by reason no new Blood can be prepar'd for defect of this Juyce.

Great Wounds of the Diaphragm are Mortal, because respiration is interrupted.

Wounds of the Stomach and Guts are Mortal, it being difficult to reunite them by reason of their peristaltick Motion. The Chyle and Excrements flow through the wound, and cause great Putrefaction in the lower Belly.

Wounds of the Mesentery are not Mortal, except the Blood-Vessels, Lacteals and Lymphaticks are cut, in which Case the Blood and Lympha flowing into the Belly, make great Putrefactions.

* These Prognosticks are mostly taken from that memorable Aphorism of Hippocrates, Sect. 6. 18. If the Urinary Bladder, Brain, Heart, Diaphragm, Small Guts, Stomach or Liver happen to be hurt, the Wound is Mortal. But these Wounds which are pronounced Mortal, are not always so, and many Instances to the contrary. (as in the Brain, Liver, Stomach, Guts, &c.) occur in Authors, particulars of which would be too numerous to recite here.

† There is no reason to pronounce Wounds of the Aspera Arteria Mortal, tho' the Cartilages of the Larynx happen to be divided. In desperate Quinsies when the Respiration is hindered by the Tumour of the Throat, Physicians sometimes advise an Incision to be made in the Aspera Arteria, by which the Lives of many have been saved, otherwise desperate. This Operation is called Bronchotomia, and the manner of performing it is described by our Author, Chap. xviii.

Wounds

Wounds of the Lungs are not always Mortal, and those of the *Omentum* are only so upon the account of the Division of the Vessels.

Wounds of the Liver are Mortal, by reason of the numerous Vessels in that *Viscus*, which admit of no Application, besides that the Heart and Lungs suffer by communication of their Nerves, from whence proceed *Syncofes*, vomiting of Bile, and difficulty of Breathing.

Wounds of the Gall Bladder are Mortal, because this is the Receptacle of the Bile, by whose Irritation the Expulsion of the Excrements is made.

Deep wounds of the Kidneys are Mortal, because these are the Receptacles and Strainers, through which the Urine is percolated.

Wounds of the Ureters are Mortal, because the Urine falling into the lower Belly, corrupts its Contents.

Wounds of the Uterus are very Dangerous, or to speak more plainly Mortal.

To conclude; all *Wounds of the Great Vessels in the lower Belly* are Mortal, it being impossible to stop the Flux of Blood.

THE OPERATION.

The Instruments here to be used, are the *Fingers, Needles and Thread*. You must have *Needles* of different Figures and Sizes, Streight, Crooked, Flat, all sharp and of well temper'd Metal. The Thread must be single or double, as the Nature of the wound shall require.

The Interrupted Suture.

To make this Suture, you must begin to clear the Wound from all extraneous Bodies and Coagulated Blood. A Servant must hold together the Lips. These Cautions are common to all Sutures. You must pass the Needle with the waxed Thread in it, into the middle of the wound from without inwards, leaving a moderate distance between each Stitch. You must pierce deep enough, and go to the bottom of the Wound, lest an effusion of Blood there obstruct the Reunion.

If a Wound have *Angles*, you must begin the Suture there. Before you tye the Knot, you must bring the edges of the wound together, which if they are not Level, will leave an inequality in Cicatrizing. If *Wounds have no Angles*, you must begin to tye that Thread which is in the midst, and

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make a simple knot on the side opposite to the discharging of the Matter; on this knot you must lay a small Compress of Linen Cloth Waxed, on which you must make a slip-knot, which may with ease be undone if any Accident happen.

If you intend to cover the Wound after the Suture with an Emplaster, you must lay a small Compress on the knots to hinder its sticking to them, which creates a great deal of trouble to the Patient in taking off the Dressings.

If any Inflammation happen, you must dextrously loose the knots in such manner, that you may close all again when the Accidents are abated. But if the Accidents are so pressing as to oblige you to cut the Threads, you must pass a Cannulated Probe under them, and slide the point of the Scissars on the Cannula. After the Reunion is compleated, you must cut the Threads on the Probe, observing to put your finger on the knots to stay the Flesh; and draw out the Thread gently, to prevent tearing open the Wound.

In Superficial wounds you must use streight Needles, in Deep ones crooked.

The twisted Suture is used in the Hare-lip, of which in its proper place.

The Dry Suture.

This is only made in Superficial Wounds, in places where we must be careful to avoid Deformity, as in the Face or Hands of the Fair Sex. This Suture is not very much to be depended on, because most commonly it loosens. The Manner of making it is thus. Take two pieces of new Linen Cloth with their Hemms on, proportioned to the largeness of the Wound. The Hemms must be laid on the edges of the Wound, then cut the Cloth into Digitations, at a convenient distance from each other. The number of Digitations must be equal to the number of Stitches you intend to make; to the end of each Digitation, sow a small Ribbon; then dip the Cloth in strong glew, and apply it a Fingers breadth from the edges of the wound; these Ribbons must be tyed to each other in such manner, that the edges of the wound may touch.

The Glovers Stitch.

This is made in great wounds of the Guts and Scrotum. To make it, Take a strait Needle with waxed Thread. Then take the two Lips of the Wound between the Thumb

Thumb and Fore-finger, whilst an Assistant holds the Gut at one end : Then stitch it length-ways, passing the Thread beneath and over the Lips of the wound, in the same manner Glovers use to stitch their Leather.

Wounds altered by the Air do not admit of Sutures, these are not to be cured without Suppuration, because the Nitre of the Air wasting the Unctuous Parts of the Blood, which is the Balsam used by Nature for the uniting of Wounds, and keeping the Parts supple, the Fibres grow dry, the Pores are contracted, and dangerous obstructions ensue. Besides the Salts of the Air lodging in wounds, are changed into a Vitriolick Arsenical Matter, which corrodes and frets the Vessels, hinders the Cure, and causes a Gangrene.

Sutures are not convenient in *contused Wounds*, which must suppurate to convert the Blood extravasated between the Fibres and *Vesiculae* into Pus. Nor in wounds *with great loss of Substance*, whose Lips cannot be brought together to reunite. Nor in the *Bites of Venemous Animals*, as well upon the account of their Contusion, as the continual irritation of the Venom, which molests the Part, infects the Mass of Blood, hinders the Reunion. In this case the external Remedies must be most potent Resolvents, and the Internal Cordials and Corroborants. Nor in *Divisions of the larger Vessels*, where the great Flux of Blood and Pledgirs with Stypticks thrust into the wound; Nor in wounds of the Breast, where the perpetual Motion obstructs the Union. It is a question among Practitioners, if Sutures may be made on *Bones laid bare*. I shall declare in short my Opinion. If there be a Contusion or Fracture in the Bone, an exfoliation must be procured, and since there is no better way to obtain this, than to expose the Part to be altered by the Air, you must not make any Suture in this Case. But if the Bone be sound and entire, and you desire to preserve it from Exfoliation, a Suture must be made without delay, in which there is no danger; because the Threads may easily be cut, if any Accident shall press. In the last place Longitudinal Wounds do not require Suture, the *Uniting Bandage* being sufficient.

THE MANNER OF DRESSING is directed in each Operation, where Sutures are necessary.

THE CURE IN SIMPLE WOUNDS, consists in reuniting the divided parts, in removing all external Obstacles, such as Coagulated Blood, and Extraneous Bodies, in bringing together the Lips, and applying Vulnerary, Agglutinating and Balsamick Remedies.

Since

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Since the Blood is the true Balsam which Nature makes use of for the Reunion of Wounds, the Surgeon must be careful to prevent all corruptions of this Noble Liquor, by extirpating the Seeds of Distempers, Rectifying its Fermentations and Digestions, and restoring it to its Natural State.

To this purpose conduce *Clysters* to cleanse the lower Belly, mild Purgatives, and lastly Diaphoreticks which purifie the Blood, and sweeten the Nutritive Juyce, v. g. $\mathcal{R}$ *Diaphoretick Antimony*, $\mathfrak{z}\mathfrak{ss}$. *Crabs Eyes*, $\mathfrak{z}\mathfrak{i}\mathfrak{j}$. *Sperma Ceti*, $\mathfrak{z}\mathfrak{i}$. *Chalk*, $\mathfrak{z}\mathfrak{ss}$. *Salt of Lead*, gr. iv. Give the Mixture in some proper Vehicle, as a Glass of Carduus, or any other Sudorifick Water. Or, $\mathcal{R}$ *Waters of Mint and Chervil*, $\mathfrak{z}\mathfrak{i}\mathfrak{j}\mathfrak{ss}$. *Crabs Eyes*, $\mathfrak{z}\mathfrak{i}$. *Diaphoretick Antimony*, $\mathfrak{z}\mathfrak{i}$. *Salt of Wormwood*, $\mathfrak{z}\mathfrak{ss}$. *Treacle of Andromachus*, *Sperma Ceti*, *Elixir Vita*, *Syrup of Speedwell*, $\mathfrak{a}\mathfrak{z}\mathfrak{i}$. Of this Mixture give some Spoonfuls from time to time till the Patient Sweat, and then cover him close.

The ill impressions of the Air must be corrected by Balsamick Applications, which must be Volatil, Saline and Oleous, resembling the Blood which is the Natural Balsam, such are *Balsam of Peru*, *Oyl of St. Johns-wort*, the *Juyce from Peel of Elms distill'd in Balneo Mariae*, *Oyl of Turpentine* allay'd with *Balsam of Peru*, *Balsam of Sulphur*, and preferably to all others of the like kind, the *Bals. Samech of Paracelsus* prepar'd with *Salt of Tartar*, volatilized with *Spirit of Wine*. But *Oyls by expression* without other preparation are dangerous, as well upon the account of their Viscosity, which makes them hurtful to the Nervous parts, rotting them, stopping the Pores, and hindring Transpiration as by a certain latent Acid, able to corrode Iron and Silver.

Sharp Medicines must not be applyed to wounds, Experience shewing us they keep wounds open too long, waste the Flesh and Blood, and by their Acrimony bring Pain and Fluxion. Only *Temperate Balsams* are proper to Parts replete with Blood, and *Temperate* inclining to Acrid and Bitter for the Nervous parts, which last require more dererging Medicines, since they commonly produce more filth than other parts. Add to these *Vulnerary Potions* made of Decoction of proper Plants, as *Great Sanicle* or *Ladies Mantle*, *Ground-Ivy*, *Speedwell*, *St. Johns-wort*, *Chervil*, *Crabs-eyes* boiled in *Whitewine*, and drunk, every part of which is *Vulnerary*. We must not use these Balsams if it be necessary to keep the wound open,

open, as in those which enter the Cavity of the Breast, for fear of any Matter which may happen to be lodged there, or any Inflammation or Contusion; for here if the wound be closed too soon, we have no means left to prevent accidents. Suppuratives must be used, which are ordinarily made of *Turpentine, the Yolks of Eggs, with the Addition of a little Honey, Myrrh, Balsam of Peru, and Gum Elemi*, and after a laudable Pus obtained, treat the wound like a simple Ulcer with Mundificants, Sarcoticks, and Agglutinating Medicines.

Wounds then are cured by applying Balsamicks, removing extraneous Bodies approaching their Lips, and retaining them by Bandage and Suture. *Hares-grease* is esteemed excellent to draw extraneous Bodies out of the wound, whether the Part be rubbed with it alone, or mixed with *Unguent of Betony*, or made into an *Emplaster with Gum-Arabick*. It is pretended *Radishes, Dictamnus of Crete* mixed with this Grease, have the same Virtue. Or $\mathcal{R}$ *Crabs-Eyes, Hares-grease, a ʒss. White Amber, ʒiij. Mix and apply them.* To these add, *Savin, Periwinkle, Crabs-Eyes*, which are proper Ingredients in vulnerary Potions, to expel all extraneous Substances.

Tents dipt in some good Balsam, must be kept in deep wounds till their bottom be cleansed, that their Flesh may grow up to their sides, without which it would encrease too fast, the Orifice close, and the Pus and Filth lodge within, from whence Pains, Inflammations, Return of the *Abscess, Fistula's*, and deep *Cysts*'s. But before any Tent be put in, it is necessary to consider well, if no Nervous part lie on the side of the wound; in this Case Tents too long or big, will inevitably create acute pain, which irritates the Nervous Parts, corrupts their Juice, and causes a dryness and extenuation of the Part. The Tent must not be very big, except it be in the middle; not filling the wound, that it may have room to swell; its point must be soft for fear of hurting the Flesh, which begins to renew and grow again. Tents must not be too long continued, because they are apt to generate a *Callus* on the edges of the wound, which obstructs Reunion; but must be diminished by degrees, to give the Flesh liberty to grow.

A Serous Humour gleeing from the wound in the time of Cicatrizing, makes the Flesh Flabby and Soft, occasions Excrescences, hinders the Union, and to Skinning. Here Desiccatives must be used to absorb excessive Humidity,

Humidity, and moderate Astringents to correct the Laxity of the Flesh, and give them a firm consistence.

There happens at some times, an inequal Roughness and Hardness in the *Cicatrix* after the Part is healed, which proceeds from the Fibres of the Skin, not exactly meeting those which they are separated from, and the Pores and Channels which before the Division were straight and answering to each other, are confounded and displaced; and from hence the Nutritious Juice being detained and stopped in the Part, produces a *Callus* in the Bones, and a *Cicatrix* in the fleshy parts, especially if Restrictants and Desiccatives have been employ'd, which contract the Pores, make the Fibres firm, and harden the Part.

WOUNDS CONTUSED easily putrefie, and this obstructs the Cure; for this Reason, if the Contusion be slight, you must have Recourse to Suppuratives to separate that which is mortified and bruised. But if the Contusion and Wound be very great, and you have reason to fear Gangrene before you can obtain a Suppuration, you must make Incisions into, and Scarify the Part, to give issue to the Blood, and suppurate the rest with good Digestives, adding *Egyptiacum* by way of precaution. From the first you must apply Topicks on the part, proper to prevent Corruption, such as *Oyl of Wax*, with which rub the part, laying on the *Emplaster of Cummin*, *Oyl of the Philosophers*, *Emplaster of Laurel Berries*, Or, *R. Roots of the greater or lesser Consound, Flowers of Chamomil and Melilot, ʒi. Saffron, ʒi. Flour of Beans, Fenugreek, ʒi. ʒi.* Boil these in water first, putting in the Roots, then add *Wormwood, Powder of Cummin ʒi.* mix these, and apply them outwardly. When the greatest part of the Contusion is overcome, rub in *Spirit of Sal Armoniack* dissolved with *quick-lime*, which is an excellent Medicine.

GUN-SHOT WOUNDS are always attended with Contusion, Laceration and Superficial Heat; for this Reason you must suppurate the Contusion, which commonly begins to appear on the third or fourth Day, during which time, it is enough to take off the dressings once in twenty four Hours. After Suppuration made, and the Abscess formed, and the contused Matter resolved, you must dress the wound with Mundificants, and clear it from all extraneous Bodies. *Spirit of Wine* and *Balsam of Peru* must be added to the Digestives and Maturing Applications, to prevent the bruised parts from mortifying. *Spirit of Wine*

is excellent in Burns, and you ought to dip your Tent in it, before you lay Digestives and Suppuratives on them, because Digestives are not always agreeable to the Nervous Parts, and Spirit of Wine corrects their ill qualities: The Application must be laid on, so as to give vent to the Matter on all sides. ¶ *Ambrose Parry's Balsam* is proper for Gunshot-Wounds, which is made in the following manner. *Rx Oyl of White Lillies or Violets, ℥ iv. Boyl in this Liquor some young Puppies, till the bones are dissolved, add a pound of Earth-worms boyled in Wine; Boyl all again, adding to the strained Liquor Venice Turpentine, ℥ iij. Spirit of Wine, ℥ iij. Mix these and make a Liniment, which is excellent to appease pain, and ripen these Wounds. After Suppuration use the following Mundificant, Rx Venice Turpentine, ℥ v. Honey of Roses strained, Myrrh, Aloes, Mastick, Round Birthwort ā ℥ iij. Barley flower, ℥ iij. Mix these for a Liniment, which imbibe and wet with Spirit of Wine. You must continue to mundifie till new Flesh grow up. If in the mean time any great putrefaction or corruption happen, you must add to the before-mentioned Remedies Precipitate well edulcorated, especially if the Nervous Parts happen not to be hurt. If Pains happen below in the Bones, Oyl of Turpentine is an excellent Remedy, especially in the Caries of a Fissure.*

WOUNDS FROM THE BITE OR STING OF VENOMOUS ANIMALS, require deep Scarifications of the part, applying to the wound *Oyl of Nutmeggs, Vigo's Emplaster with Mercury. Juice of pounded Onions* is excellent for the Puncture of Spiders. Scarification is not necessary if the wound be not deep, as the Sting of a Wasp, or some such like Insect. In the Bites of Vipers or Serpents, you must scarifie the part, and crush a living Toad on it; or a dry one, if you cannot get one alive; if you macerate it in Wine or Vinegar, it will be more efficacious: A red hot Iron applyed as near the wound as may be, is a Remedy experienced by *Mr. Boyle*. The *Serpentine Stone* found in Snakes of the *East-Indies*, or that compounded of it, is a very good preservative against the Bites of all Mad or Venomous Animals. Or in defect of this, the *Magnetick Emplaster of Angelus Sala*, with the addition of an Ounce or two of *Crabs-Eyes calcined*. The contiguous parts must be rubbed with *Oyl of Scorpions, with a little Sugar of Lead* to prevent inflammation. The following Cataplasm against the biting of Venemous Animals, is generally

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rally reputed good. *R.* One sharp Onion, one Clove of Garlic, Balm, Venice Treacle, Common Leaven, ā ʒ ss. Beat all together into the form of a Cataplasim. After the Venom is drawn out of the Wound, apply a good Balsam or a Digestive, with the addition of *Egyptiacum*. Inwardly you must give *Spirit* and *Volatil Salt* of *Vipers*, *Spirit* and *Decocti- on* of *Crabs* to stop the progress of the Venom. *

WOUNDS OF THE VEINS AND ARTERIES, are always attended with great Flux of Blood, to stop which, apply *Crepitus Lupi*, which is a sort of dried *Fun- gus*, with a close Bandage. This may be soaked in a So- lution of *Vitriol* of *Steel*, with a moiety of *Salt* dissolved in some decoction of *Mild*, *Vegetable*, *Restringents*, and applied cold with *Stupes*. If the wound be large, you must throw in *Bole-Armoniack*, or the *Caput mort.* of *Vitriol* well edulcorated. You must observe that all *Strycticks* whatever are useless, except they be kept firm on the part with a streight Bandage. *Oak Moss*, or the *Pith* of *Elder* pulveriz- ed and strewed on the Wound, stop an *Hæmorrhage*. *Moss* of a *Human Skull* is a certain Remedy. The following *Re- stringent* is good, *R.* Sharpest *Vinegar*, ʒ i. *Crocus* of *Steel*, ʒ i. *Colcothar* or *dulcified Earth* of *Vitriol*, ʒ ss. Beat all toge- ther very well, and dip Rags with powder of the *Crepitus Lupi*, and apply it to the Wound. If these means are not sufficient, make a ligature on the *Vessels*, according to the manner prescribed in the Operation of the *Aneurism*. For the internal Medicines which stop Blood, those wherein *Swines* or *Asses Dung* are Ingredients are to be preferred, and to those which have *Nitre* prepared with *Antimony*, *Tinctures* of *Sulphur* and *Vitriol*, and the *Astringent Tincture* of *Mars*. If *superfluous Flesh* spring up, you must strew on burnt *Alome*, *Crocus Metallorum*, or rub the part with *Egyptiacum*. But the best way is to touch it with the *Lapis infernalis*. †

WOUNDS OF THE NERVES AND NERVOUS PARTS. These parts are easily altered and corrupted, and contract a *Gangrene* by means of the external Air, and the Flux of that *Synovia*, [or *thin Gleet*] which obstructs their

* Add to these infusion of the Part with the actual Cautery, applying of Cupping- glasses and dipping in the Salt-water, which last practice now commonly used after the Bites of Mad Animals is recommended by Celsus.

† The *Lapis infernalis* is not the *Luxivial Causick* commonly so called in England, but the *Lunar Causick* described by Lemery with that Title.

Unition. In hurts of the Nervous Parts, it is necessary to rub the Limb from the first rise of the Nerves with Oyl of Earth-worms, heightned with Distilled Oyl of Lavender. Distilled Oyl of Lavender taken inwardly, removes Convulsions, and so do's Oyl of Sage, Amber. All Unctuous and Mucilaginous things, all Greases and exprest Oyls are hurtful in Nervous wounds, which require penetrating Medicines, such as Balsam of Peru, Distilled Oyl of Turpentine, Oyl of Wax, Distill'd Oyl of Lavender, Oyl of the Philosophers, Distill'd Oyl or Balsam of St. Johns-wort, Spirit of Wine and Gum Elemi. The following Composition is excellent, $\mathcal{R}$ Dialthea $\mathfrak{z}$ iv. Distilled Oyl of Bays, $\mathfrak{z}$ iss. Mix and apply this. The following Oyl is admirable to apply to the Fist, $\mathcal{R}$ the tops of St. Johns-wort in flower, two Handfulls; Common Oyl, l. vi. Digest these together, adding Turpentine $\mathfrak{lb}$. Powder of Earth-worms, $\mathfrak{z}$ iiij. a little Saffron, Mix these and apply them to wounds of the Nerves. Tents must not be put into Nervous parts if it can be avoided, because they aggravate the Pain. To abate the Synovia or Gleet from the Joynts, $\mathcal{R}$ Oyster-shells calcined, $\mathfrak{z}$ i. Powder of Skulls burnt, dried Bones, Jaws of a Pike calcined, $\mathfrak{a}$ $\mathfrak{z}$ ij. Burnt Ivory, Terra Sigillata, $\mathfrak{a}$ $\mathfrak{z}$ iss. strew the Powder on the Part. Hogs-dung incorporated with the Blood of the Wound, Boyled and applyed in form of a Cataplasme, is a Specifick to stop the Synovia, Distill'd Water of pounded Crabs applyed with Raggs, does not only stop the Synovia, but takes off all other Inflammations, Erysipelas, and Pain in wounded Parts. If Convulsions proceed from a partial division of the Tendons, cut them quite asunder, and sitch them as directed in the Operation of the Suture of the Tendon.

WOUNDS OF THE BREAST, if they hurt the Lungs, require internal Medicines to prevent and cure a Pleurisie or Peripneumony, which ordinarily happen in these wounds. You must put in Tents Capped, or with a Head, to give a free exit to the Blood and Sanies, which otherwise would create an *Empyema*. Internally you must give Diureticks and Vulnerary Potions; We may observe Pus, Sanies, and Blood sometimes voided by Urine in these wounds.

WOUNDS OF THE HEAD, require the Body to be kept open, if they are superficial it suffices to use Oyl of St. Johns-wort, Balsam of Peru, Emplaster of Betony. Or this following, $\mathcal{R}$ Emplaster of Betony, Tacamahac $\mathfrak{a}$, incorporate these with Balsam of Peru. If the wound hurt the Cranium,

Cranium, and do not pass through it, strew on it powder of *Orrice Root*, *Aloes* and *Myrrh*, impregnated with *Spirit of Wine*, or distilled *Oyl of Turpentine*, and lay dry Lint on it. Nothing which is oily or greasy, is to be used in Fractures of the *Cranium*. If wounds pierce the *Cranium*, stop instantly the Flux of Blood with Powder of *Frankinsence* and *Whites of Eggs*, with a little *Bole Armoniack*. Put into the *Cranium* Pledgits dipt in a little *Oyl of Turpentine*, with *Balsam of Peru*: You must never suffer oily or greasy Medicines to touch the Brain; if the Brain or its Membranes begin to corrupt, use *Honey* with some few drops of *Oyl of Turpentine*, but never *Honey* alone. In contus'd wounds which are Superficial, use to the part affected *Oyl of St. Johns-wort*, with a small proportion of *Chymical Oyl of Aniseeds*; But if they are Deep, there will be a great swelling, and you must attempt to dissipate it by insensible Transpiration, or open it without farther delay, lest the Pus corrode the *Periosteum* and the Bone by its Acrimony, and then heal the wound with Digestives and Suppuratives, of which kind is this Composition. R. *Turpentine distilled*, *Gum Elemi*, ā ʒiſs. *Beavers Grease*, and *Stale Hogs-lard*, ʒi. Mix these and apply them.

REMARKS.

It is Useless as well as Dangerous, to make Sutures on Parts tumified, as some Practitioners have done after the Amputation of Limbs, passing the thread crossways to draw together the Flesh; this Practice is to be condemned, because the parts after the Operation tumefying with abundance of pain burst the Threads which kept them in, and hinder the Application of Pledgits.

C H A P. III.

Of the Suture of the Tendon.

THIS Operation is a *Stitching of the Tendon to reunite its parts.*

THE CAUSE of the Suture of a Tendon, is its division.

THE SIGNS are evident from the apparent Separation, and loss of Motion in the part.

The O P E R A T I O N.

When a Tendon is cut asunder, it suffers no Tension, Inflation or Fluxion, the contracted parts only retiring and increasing something in Bulk. But if the Tendon be divided in part only, you must instantly cut it asunder, without which there will infallibly follow vehement and sharp Pain, Convulsion, *Syncope's* Vomiting, Fluxes, Feavers, *Coma's*, and frequently a Gangrene. The Fibres remaining entire, wanting the Assistance of those which are cut, are burst and torn by the contraction of the Muscle, or suffer violent Tension, and the Blood spilt in the Wound beginning to ferment, its Saline parts prick and molest them, which determines the Spirits towards the Muscles in a great Hurry and Confusion, and causes the Convulsion. The Spirits flying to various parts of the Body in this disorderly manner, the Heart is deprived of their influx, disabled in its motion, and hence *Syncope's* necessarily insue. The Spirits beginning to regain their Natural Course, redouble their Strength, and Dart themselves with great Swiftneſs into the Fibres of the Stomach, by the great communication between the Nerves of the Heart and this part; and this creates violent *Heavings and Vomiting's*. The Stomach by its contraction very much compresses the Gall-Bladder, and the Biliary and Pancreatick Duct, forcing them to discharge their contents into the Guts, and from hence *Fluxes* arise. These Liquors wanting due preparation, corrupt and communicate an ill Ferment to the Chyle, with which they are mixt in the Intestines, and from hence *Feavers* proceed. The Fermenting Blood rises to the Brain with great impetuosity, and the Vessels by the slow Circulation through the *Sinus's*,

not being sufficient to discharge it into the Jugulars, with the same Expedition it is brought thither, and compresses the Nerves arising from the Basis of the Brain, which are dispensed to the Organs of Sense, and this causes the *Coma*.

If the Tendons are so far contracted within the Flesh, that you cannot draw them out with your *Forceps*, mollify them with *Oyl of Wax*, or *Oyl of sweet Almonds drawn without Fire*; because these being Viscous, are for that reason proper to sheath the Acidity of the Blood, and abate the Pain. If the opportunity of rejoining the Tendon while the Wound is recent be neglected, you must open the Cicatrix as little as may be, because the Flesh preserves it from the Alteration which might otherwise happen.

In making the Operation, cut as little as may be the extremity of the Tendons, if they happen to be callous by remaining long divided. The part must be kept a little bended, for the better approaching of the two ends, which must be brought about one sixth part of an Inch one over another. It is not sufficient for their Union to have the Edges brought together, because by the Contraction of the Muscle, they would be soon draw asunder; but by applying the one extremity a little over the other, they are reunited by the Nutricious Juice issuing from their two Extremities, and forming a sort of *Ganglion*.

The Surgeon must take a Strait, Thin, Flat Needle, threaded with a doubled Thread well waxed, with a Knot at the end, into which he must put a small Compress. Then he must pass his Needle from without inwards into the Tendons, laid over each other, and after from within outwards, then make a simple knot on the small Compress, and after that a slip-knot.

The DRESSING. When the Operation is finished, you must keep the part bended by the help of Past-board and Bandage, for fear lest the ends of the Tendons should be drawn asunder, which would make their Reunion after impossible. You must lay on the Wound a small Pledgit dip in some Spirituous Liquor, and a small Compress over it, and keep all on by rolling the Part.

The CURE: When the Wound is Cicatrized, chafe it with Spirituous and Balsamick Medicines, to make the Tendon supple, and by degrees extend it self, lest the Part remain stiff and contracted. The Suture must be humected with *Oyl well mixed with Spirit of Wine*. The following

following days you must use a Balsam made with *Turpentine, Tincture of Aloes in Spirit of Wine*, infusion of the *Flowers of St. Johns-wort*. All oily and greasy Medicines corrupt the Tendons, and must be forborn. Cataplasms made of *Wine*, with the four meals, the *Yolk of an Egg* and *Honey*, are very good in the beginning of the Distemper. During the whole Cure, you ought to chafe well the Limb with some good Liniments, to the Origin of the Nerves; for example, the Neck, if it be the Arm; and the Spine of the Back, if it be the Thigh and Leg, with *Oyl of Earthworms*, heightened with the *Chymical Oyl of Lavender*. The following Unguent is good. R *Oyl of Earthworms, Foxes, Mans Fat* à ʒiſs. *Juice of Earthworms*, ʒiſs. Mix all well, and rub the Part with them. *Balsam of Peru, Distilled Oyl of Turpentine, Oyl of Wax, Distilled Oyl of Lavender, Oyl of the Philosophers, Distilled Oyl of Bays, Balsam of St. Johns-wort, Spirit of Wine, Gum Elemi*, are good Medicines to apply to the Tendons, and all other Nervous parts. The Composition of *Felix Wortz* is excellent, which is thus made; R *Of the Unguent Dialthææ*, ʒiiij. *Chymical Oyl of Bays*, ʒiſs. Mix and apply them. This *Oyl of St. Johns-wort* is admirable. R *Of the Tops of St. Johns-wort in Flower*, one Handful, *Common Oyl*, ʒvi. Digest these together, adding *Turpentine*, lb̄i. *Oyl of Earthworms*, ʒiiij. with a small quantity of *Saffron*; mix the Ingredients. The *Exuvia of Snakes powder'd*, and *Crabs-Eyes mixed*, is admirable to unite Nervous parts divided. Or, R. *Distill'd Oyl of Turpentine* ʒi. *Campbor* ʒſs. *Spirit of Wine* ʒi. mix and apply them; This is *Parry's Medicine*. Last of all Frictions with *Balsamick* and *Spirituous Medicines* supple the part, dispose it to a gradual Extension, which otherwise would remain stiff and bended.

R E M A R K S.

We must not esteem this Operation imaginary or impracticable. *Veslingius* in his *Epistles*, *Bartholine* in his *Observations*, and *Ermuller* in his *Chirurgery* assure us, that it was made at *Paris*, on a certain Person who had all the Tendons of the Wrist cut. * This Operation has this ob-

* This Practice, of which there are several Hints in Authors, as *Guido de Cauliaco*, *Felix Wurtzius*, *Severinus*, and others, was of late years revived and practis'd with Success by *Monſieur Bichaise*, and some other eminent Surgeons at *Paris*.

A Compleat Body

servable consequence, that upon all change of Weather the Patient finds a pain resembling the Gout, in the place where the Suture was made.

C H A P. IV.

Of the Hare Lip.

THIS Operation is *The Reuniting a Lip cleft, by the help of the Twisted Suture.* This Deformity derives its name from the resemblance to the Lips of Hares which are cleft after the same manner.

THE CAUSE. This Defect is either *Natural*, when the Child comes into the World with it, or is caused after from some Cut, Fall, or other like *Accident*.

If there happen to be a considerable loss of Substance, you must not adventure on the Operation. The Cure in this case would be worse than the Distemper it self, and the Skin being so tense and close to the Gum, it would be difficult to Articulate several Words, or move the Lips without a great deal of Trouble. When this happens in the lower Lip, it proves more obstinate than in the upper, by reason of the constant flowing of the Spittle into the Mouth. It is dangerous to undertake this Operation in young Infants, because their continual Crying, the Softness of the part, and the necessity of Sucking, would hinder the Union; and therefore it must be deferred till they arrive to an Age to submit to the trouble upon Rational Motives. But if you resolve to do it, be sure to keep the Child from Sleeping for some time before, that he may sleep soundly after the Operation is over.

This is not to be done in Old Bodies, whose wounds are difficult to be cured, nor in Scorbutick or Pocky People, whose Blood is Sharp and Corrosive, which like an *Aqua-fortis* eats and hinders all Union. The Blood of Women who want their Courses, is little better than a serous Mass, without its due Consistence or Unctuousity, who therefore are not proper Subjects for this Operation. But it may be successfully undertaken in Sound, Healthy Bodies of a compleat Age to undergo it.

THE SIGNS are evident of themselves, the Deformity being sufficiently visible.

THE

THE OPERATION.

To perform this Methodically, first free the Lip from the Gum with a sharp Knife; that is, cut the small Filament which ties it down; and here you must have great care in disengaging the Lip not to hurt the Gums. It is better in this case to touch something on the side of the Lip, because if we should go too far on the other, the bone of the Jaw would be bared, and ever after remain so. When the Lip is separated, seize it with your *Forceps*, and with your *Scissars* take off the Callosity on the sides, cutting off as little as possible. The Assistant who stands behind and holds the Patients Head, must press his Cheeks forward with both Hands, that the Lips of the Wound may be applied level to each other, for the least inequality would be very deform and disagreeable to the Sight; after this pass a Needle with a waxed Thread thro' the Lips from without inwards, at a very little distance from the edges, lest if you do it too close, the Thread may cut thro' the Lip with the least striving, turn the Thread round the Needle, and after several Turns, cross it above and below the Needles. These turnings stay the Lip, and keep its sides level. You may pass as many Needles, as you shall think convenient. If the Lip be great, and the cleft extend quite to the Nose, you may pass three, breaking off the points, and putting a Compress under each end to prevent their pricking, and causing an Inflammation.

THE DRESSING. When the Operation is over, wipe the Lips with a Sponge dipt in Wine a little warm'd, and lay on the Wound a Pledgit dipt in some good Balsam, and between the Lips and Gums a Rag dipt in some Desiccative Liquor, to hinder the Lip from growing to the Gums, and over all apply the Roller with four Tails, or the Uniting Bandage. To make the Bandage, take a piece of Linen Cloath about an Inch broad, and an Ell and an half in length, more or less according to the largeness of the Subject, make a hole in the Roller in the midst, an inch and an half long, Roll it with two Heads one at each end. You must begin to apply it behind the Patients Head, and bring the ends of the Roller forwards, and pass one of them thro' the hole you made, then apply the cleft on the part affected, and next bring back the two ends behind the Head over the other pretty close, and fasten them with Pins at their ends.

If you rather chuse to make use of the Roller with four Tails, this is the manner of making it. Take a Roller about an Inch broad, and about an Ell long, more or less according to the bigness of your Subject. Double this, and cut it lengthways with your Scissars, so that there may remain three fingers breadth plain in the midst. This Roller is thus cut into four parts, each of which is called a Tail. You must begin with applying the middle, broad, undivided part of the Roller on the Wound, and the two upper Heads you must pass behind the Patients Head downward, and fasten them at their ends, next take two lower, and pass them to the hinder part of the Head ascending, and having made them cross with the two upper Tails fasten them with Pins at their ending.

It is a general Rule in the applying these divided Rollers to make the upper Tails pass downwards, and the lower pass upwards, and so cross with the former.

* The Emplaster must have a Traverse and a Branch at each extremity of the Traverse. The Traverse is to be applied on the Lip, and each Branch to be clapt upwards on the side of the Nose.

THE CURE. The Dressings must be removed twice or thrice after the Operation; for which purpose a Servant must stand behind the Patient and press his Cheeks forward, for fear the Wound should open it self, while the Surgeon is taking them off. If there be three Needles, he must untwist about half the Thread of that in the midst, and one or two rounds of the other, and then dress it as before: Seven or Eight days after, the Dressing must be taken a second time off, and if the Union be compleated, the Needles must be gently drawn out, lest if they should remain longer, their Holes might be difficult to fill.

R E M A R K S.

Guillaume relates, that having made this Operation on a Child of five Months old, it was attended with so many ill Accidents, that he expected it would die, and therefore advises never to Attempt it in so young an Age.

See this Roller in the Plates, Fig. 3. and the Emplaster Fig. 20.

C H A P. V.

Of Gastroraphia or stitching the Belly.

THIS is a Suture of the lower Belly, to prevent the Guts and other parts contained in it from falling out.

THE CAUSE which obliges us to make this Operation, is a Wound received in it.

THE SIGNS. Wounds of the Belly are *Great* or *Small*, if they are great enough to let the Intestines fall thro' them, you must make use of the interrupted Suture; but if they are small, you must only put in a Tent for discharging of the Pus. Wounds of the lower Belly are with *Lesion of the Internal Parts*, or *without*. We conclude that the Internal Parts have received hurt from the *Instrument*, with which the Wound was made, which if it had a sharp Edge or Point, in all appearance the Parts are hurt. We may judge of the hurt by the acute Pain, Inflammation, Fever, or evacuated Matter, which may be distinguished by its Colour, Smell, Consistence from the Pus proceeding from the Wound.

You may make a Judgment of the parts Wounded by the Situation, and the Posture the Person was in at the time he received it. If the Guts or *Omentum* come forth, we must examine whether they are mortified, or any ways hurt.

The OPERATION.

If there happen to be a great Wound in the Guts, make the Glovers Suture with a strait flat Needle, and waxed Thread. A Servant must hold the Gut on one side, and your self on the other, make the first stitch at a very small distance beyond the Wound, and continue it lengthways, holding it between the Fore-finger and Thumb. You must not tie the Thread, but let one end hang out of the Wound. If the *Omentum* befallen out, it is almost ever mortified, it being very spongy, loaded with Fat, and its Texture lax, abounding with Humours, and an infinity of Vessels in it, upon which account the Air easily penetrating its Substance, Coagulates the Blood, and the part being deprived of its Vital Warmth and Motion, soon mortifies.

The Mortification of the *Omentum* is soon discovered by its livid Colour, and the corrupted part must be cut off before the rest be replaced in the Belly. To do this pass a Needle with a waxed Thread into the sound part cross the *Omentum*, taking care not to prick the Vessels. The Ligature must be indifferent close, and you must take off part of the *Omentum*, cutting it to the quick an inch and half above the Ligature. One end of the thread must be left to hang out of the Wound, the better to bring the *Omentum* to its edges, and Cicatrize it with more ease, as well as to draw out the threads after the Suppuration has rotted them. The Inflation of the Guts proceeds from the Air which insinuates it self, shuts the Pores, obstructs the Circulation, and by consequence causes an Inflammation. Besides all this the Gut suffering Strangulation, the motion of the Blood is interrupted, and flowing in by the Arteries, and not returning by the Veins, must needs Tumefie the Part. You must attempt to dissipate this, by applying live Animals cut open to them, or by Fomenting with a Decoction of Line-seed. The following Medicine is good. *R. Flowers of Chamomil, Melilot ā, one Handful; Aniseed, Sweet Fennel-seed, Cummin-seed ā ʒi. Cloves and Nutmegs ā ʒss. Boil all in Milk. To this add Decoction of Spirit of Wine comphorated, ʒi. Sugar of Lead, ʒij. Oyl of Aniseeds, ʒij. and Foment with this Decoction hot.*

Before this Suture be made, the Guts must be fomented with Spirit of Wine, with a little Camphire dissolved in it.

If the Guts are mortified or gangrened, use no unguent, but foment them with Spiritous and penetrating Liquors. In this case, *Oyl of Flints with a little Spirit of Wine comphorated*, is an approved Medicine. If all these Mediums happen to be useless for the Reduction of the Gut, dilate the Wound; which if it be in the upper part, the Dilation must be made downwards, if Transverse and near the *Linea alba*, recede from thence. To make this Dilation, you must bring the Intestines dexterously on the side of the Wound to find its direction, then lay on a Compress dipt in Wine a little warmed, and introduce a Director into the Belly, turning it on one side and another, to prevent engaging the Gut between it and the *Peritonæum*, and to be sure that it is not engaged, draw it a little back. The Director must be held in your left Hand, and you must slide in an Incision-knife to dilate the Wound, and cut the Teguments equally within

within and without. You must search for that part of the Gut which is nearest to the Orifice of the Wound, which thrust back into the Cavity of the Belly with your forefinger, not taking it out till with the forefinger of your other Hand, you have by degrees thrust in the remaining part, and wholly reduced the Gut. There is no necessity of shaking the Body, as the Ancients did to restore the Guts to their place, Nature taking sufficient care in this Affair.

All parts being reduced, make the interrupted Suture, which is called *Gastrophia*, when it is practised on the Belly.

THE OPERATION.

For performing this, take two crooked Needles threaded with one Thread, put the forefinger of the left Hand into the Belly, to bring the *Peritonæum*, Muscles and Skin all together to the edges of the Wound; then hold your Needle together with your Wound, and pass it from within outwards, carrying the point over your forefinger, to prevent hurting the Gut. Take Scope enough, lest the continual Motion of the lower Belly force the Suture. When this is done without drawing your finger out of the Wound, take hold of the other side, and pass the Needle from within outwards, with the same precaution as before. If there be several stitches to be made, make them in the same manner as the first, without taking your finger out of the Belly. The Threads being all pass'd, a Servant must hold together the edges of the Wound, and you must tie them, beginning with that in the middle, and observing all the Directions we have before given in describing the Interrupted Suture. Some pretend that a Tent ought not to be put into the Wound, which is open enough by the continual Motion of the Belly.

THE DRESSING. When the Suture is made, apply on it a Pledgit dipt in some Balsam or Spirituous Liquor, and Embrocate the Region of the Belly with *Oil of Roses*, with a little Spirit of Wine, then lay on an Emplaster, over all a Compress dipt in *Oxycrate*, or some other Defensative, and keep all on with the Napkin, Scapular, or other convenient Bandage.

To make this Bandage, take a great Napkin, fold it three or four times lengthways, and roll it at both ends to apply it more commodiously. This must be laid over the part affected,

affected, you must bring it behind, and then forwards again, and then fasten it with pins. This *Napkin* must be supported by the *Scapular*, to make which, take a piece of Linen Cloath 7 or 8 Inches broad, half or three quarters of an Ell in length, make a Hole in the midst to pass its Head through, one of its two ends must fall before, and the other behind; and both must be fastned to the *Napkin* with Pins; it is best to fix them to the *Napkin* the first Turn. You may cut the *Scapular* so that it shall have four Tails, and it will support the *Napkin* better if these are fastned so, that each Tail were cross the other.

THE CURE. If the *Guts* or *Omentum* are hurt, the Patient must lie on his Belly the first Days to give them opportunity, gluing of themselves to the edges of the Wound, nothing conducing more to their Cure. You must place a small, flat, soft *Boulster* under his Belly. This Situation is proper, because the *Viscera* bearing their weight on the *Peritoneum*, this Compression abates their Motion, besides we may observe the Internal parts never cured, except by uniting with Neighbouring parts.

During the Cure, the Patient must observe an exact Diet to abate the peristaltick Motion of the *Guts*. You must foment every day the Parts with Mollifying and Resolvent Medicines, to prevent Tension, which mightily obstructs Reunion, for the Lips making an effort to separate themselves cause great Pain, and often burst the Stitches. You must take care to give frequent Clysters, because they Relax the Fibres, and dilute the contents of the *Guts*, as well as cool and allay the Motion of the Blood and Spirits, and prevent Accidents. Bleeding is a great means to prevent Inflammation, and so are all general Medicines seasonably used.

If the edges of the Wound are Callous, you must have recourse to Digestives which relax the Fibres, remove Obstructions, promote the production of Flesh, and by consequence advance the Cure.

A good Digestive may be made with *Turpentine* and the *Yelks of Eggs*, adding a little *Honey of Myrrh*, and *Gum Elemi*. This Digestive is Unctuous and Temperate, equalling in its Vertues the best *Vulneraries* and *Balsamicks*, corrects the Acid in Wounds, puts a stop to their Progress, and disposes the vicious Ferment, which is the cause of all Corruption, to be expelled. When the callous edges of the Wound are softened by Digestives, and you have obtained a laudable

Now, you must use Mundificants as in ordinary Ulcers, without Malignity.

REMARKS.

If the Gut happen to be quite cut asunder, the two ends must be stitched to the edges of the Wound to which they will reunite; and you must Cicatrize the edges, keeping them from uniting together, which may be easily done by great Tents. This Orifice will serve in the Nature of an *Anus*, as we have seen in a Soldier who had one of the great Guts cut, which was joyned by a *Cicatrix* to the Wound of the Belly, through which the *Fæces* pass, the *Anus* being closed up. The most observable thing in this case, was the Excrements which he voided had no discernible smell. *Fabricius Hildanus* relates, *Centur. 6. Obs. 72.* That a Surgeon having the Misfortune to cut one of the great Guts in the Operation of the *Bubonocèle*, the Gut Cicatrized to the Wound, and the Party voided his Excrements, and sometimes Worms by this Orifice.

C H A P. VI.

Of the Paracentesis or Aperture of the Belly in Dropsies.

Paracentesis is *the Punctiō made in the Bellies of Hydropical Patients, to let out the Waters.*

THE CAUSE is *some Dropsie.* These are *General or Particular.*

General Dropsies are the *Ascites, Anasarca, Leucophlegmatia.*

The *Ascites* is *Genuine or Spurious.* The *Genuine* arises from a quantity of Water which fills the Cavity of the Belly, and distends it to an extraordinary Magnitude. In the *Spurious* or *Bastard Ascites*, the Waters are contained in the Teguments of the Belly, and not in its Cavity, and these only are affected. Tho' the Waters float on the Muscles, yet in opening the Bodies of Hydropical Persons, we find the Fibres of the Muscles whitish, as well as the Neighbouring Parts, by their long soaking in the Water; but in all other respects, as
sound,

found, solid and firm, as if there had been no such Inundation ; and because the Waters which from this *Anasarca* are sweet, insipid, and void of all Acrimony, and by consequence incapable of infecting the Parts in which they are lodged, the Patient has no Fever or Thirst, and the Urine is sweet and crude. But in the *Genuine Ascites* the Urine is Red, Lixivious, with a violent Thirst, and a constant Hectick Fever, and very small in quantity.

There are two principal Causes which concur in the forming a Dropsie, the Dissolution of the Blood, and the slowness of its Circulation. The Blood becomes serous and incapable of preserving the Union of its Parts, when the Balsamick parts are dissipated by violent Exercises, long Meditation, excessive Grief, by the Abundance or Exaltation of its Salts, and by this Colligation, it finds ways to get out of its Vessels, and produce Dropsies. When the Circulation of the Blood is slow, from whatever cause it proceeds the Serosities begin to separate, as in Milk from the Caseous Part, or in the same manner as in the Porringer after bleeding ; because the Motion which it had in the Vessels ceasing, the Parts fall together and press out the *Serum*, not unlike Water exprest out of a Sponge by clinching the Hand. And these Serosities not being longer detain'd by the Oleous part of the Blood, find a way to transpire thro' the intervals of the Fibres. This Opinion is confirmed by the experiment of making a Ligature on the Veins, which obstructing the Reflux of the Blood, the part becomes Hydropick.

We see Women for the most part have their Legstumesied ; during the time of their going with Child, because the *Fœtus* compressing the Vessels which return the Blood to the Heart, the Circulation is very much impeded. Add to this, that all People dwelling in Marshy places, and those who are of a cold Constitution, are oftner attacked with these Distempers, because the Motion of their Blood is slower.

When the Waters are included in a *Cystis*, the Dropsie is for the most part incurable. This *Cystis* is a Case which by degrees is separated from some Neighbouring Membrane, by the discharge of abundance of muddy, saline Water, which corrodes those Filaments by which it was connected to them. It abounds with an infinity of Glands and Vessels, which it receives from the Neighbouring Parts, all which afford matter for Dropsies.

The

The *Anasarca* or *Leucophlegmatia* is a soft watry Tumour, which extends over the whole Body, especially the Muscles, and yields to the impression of the Finger.

Particular *Dropsies* only occupy some one part, and receive different Names from the Parts affected, as *Hydrocephale* in the Head, *Hydrocele* in the Scrotum, and *Hydromphalus* in the Navel, &c.

THE SIGNS of a Dropie are swelling of the Belly, Transparence and Fluxion of the Waters, difficulty of Breathing, a Fever, a low, quick Pulse, a heaviness of Body, Insatiable Thirst, and difficulty of making Water.

The *Fever* arises from the impure Chyle and Saline Water, which mixing with the Blood pass to the Heart, and fermenting there create a disorder in its Motion. The Heart by its Communication disorders the Pulse of the Arteries, kindles a Fever which is not very perceptible, by reason of a Deficiency of the Spirits, unable to give the Blood any great Degree of Motion, and hence comes the *lowness of the Pulse*. The *Pale Complexion* and the *Heaviness of the Body*, proceeds from the slow Motion of the Blood, the Mass of Water with which it is loaded, and the Dissipation of the Spirits which are in a manner drowned in such a quantity. The *Difficulty of Breathing* arises from the great Tension of the lower Belly, which presses the Diaphragm towards the Lungs, so that wanting liberty to extend it self, Respiration becomes frequent and forced. The *Excessive Thirst* proceeds from the Salt Waters, which are the Causes of this Distemper. The Patient has a *Difficulty of Urine*, because the Urine which in a Natural State passes through the Kidneys, discharges it self into the capacity of the Belly. Besides that the Salts of these Waters molesting the Urinary Ducts and *Sphincter* of the Bladder, force them to a more than ordinary contraction.

THE OPERATION.

Before the Operation, you must have Recourse to *Diureticks*, *Sudorificks* and *Aperitives*.

The strongest Diureticks are Roots of Dwarf-Elder, Iris, Gratiola, Wild Cucumbers, Leaves of Soldanella infused in Spirit of Wine Tartarised, the Pith of Elder, Saffron, Chrystal Mineral; Roots of Butchers Broom, Polypody, and Garden Flags, which infused in White-wine, have a very good effect. The following Sudorificks are good, Diaphoretick Antimony taken from 6 gr, to 30. in any proper Vehicle,

as

as *Carduus Water*, *Sal Armoniac* and *Tartar* given separately, and one after another, from 4 to 10 gr. each. *Volatil Spirit of Sal Armoniac*, from 6 to 20 gr. *Carduus* and *Balm-water*, from ℥ij. to vi. *Volatil Salts of Tartar*, *Vipers Urine*, *Hartshorn* and *Ivory*, from 6 to 16 gr. Powder of *Vipers* to thirty, covering well the Patient after the taking these Medicines. Proper *Aperitives* are *Salt-Petre* refined, from 10 gr. to 3i. *Sal Armoniack*, from 6 to 24 gr. *Falap*, from 10 gr. to 3i. *Rosin of Falap*, from 4 gr. to 12. *Rosin of Scammony*, from 4 to 10 gr. *Chrystals of Tartar*, from 3i. to 3. *Tartar Soluble*, from 15 gr. to 3i. *Spirit of Turpentine* and *Spirit of Cresses*, from 15 drops to 3i. *Extract of Aloes* from ʒi. to 3i. Besides infinite more, of which Authors are full, not to be made use of without good Advice.

If these Remedies are ineffectual, you must proceed to Operation, which must be performed in the following manner. The Patient must be kept sitting on his Bed or on a Pillow, to give the Waters leave to fall down. And a Servant must hold his Belly with both his Hands, to harden and stay the place in which you design to make the Operation. * You must pierce the Belly with the Tap or Pipe with a Needle in it, three or four fingers breadth below the Navel, and about the same distance on the side, to avoid hurting the *Linea Alba*. You must stretch the Skin a little, that it may fill up the Orifice, when you have drawn your Instrument out. You must make the puncture at one thrust, so that your Needle and the *Cannula* which contains it, may enter the Belly. Then draw the Needle out of the *Cannula*, to give way for the exit of a sufficient quantity of Water, which must be proportionable to the Patients strength. This Instrument is preferable to the Lancer; because when you have drawn it out, the Orifice is so small the Waters cannot get out after, and the Aperture made by a Lancer is so great, it is very difficult to stop them. If the Waters are thick and muddy, and cannot pass through so small a puncture, you must make the Aperture with a Lancer, and leave a *Cannula* in it; till you have drawn out all the Waters, which you must do at several times, left

* This Instrument was first described by Barbette in his *Chirurgie*, which he says was then lately brought out of Italy by Mr. James Block a Surgeon at Amsterdam. This he published in his Book, but with this difference, that he makes his of Steel edged at the point like a Lancer, whereas the other was made of Silver with a round Point.

you weaken the Patient too much, and throw him into a *Syncope*. When you make a second puncture with this Instrument, it must be below the former. If the Waters make a great swelling about the Navel, make your puncture in this manner described. But if they fall into the Legs and Thighs, make Scarifications, about the depth of a Bleeding, four fingers breadth below the internal Anles, whence you will have a great deal of Blood and Water; and after lay a little Lint on, and keep it on with a Bandage. When you would have the Waters come out, you must undoe the Bandage and cause the Patient to walk, some body holding him up. If these are not sufficient, you may Scarifie the *Scrotum*, Prepuce, and Thighs, all which Rivulets joyning will make a considerable Evacuation.

THE DRESSING. Lay on Pledgits and a Compress on the Scarification, with a Bandage four fingers broad, and of a length proportioned to the Parr. This must be rolled at one end only, and apply'd on the Compress to keep that on the Scarifications, over which you must make several Turns or Rounds: After this, ascending and descending again spirally, still leaving one third part of the Roller below bare, and in the last place fix it with Pins at its ends. If the Operation be made with the Lancet, put a Tent into the *Cannula* which remains in the Belly, and a great Compress made of Rags three or four times double, or more if you think fit, and sustain all with the *Napkin* and *Scapular*; the manner of making and applying which, we have shewn in the *Gastroraphia*.

If you have made the Operation with the Tap, there is no need of Dressing. The Perforation is so small, the Waters cannot make their way through. But if for more security you have a mind to make one, you need only apply a simple Compress on the Puncture, with a Bandage to keep it on.

THE CURE. The Patient must use a drying Dyet, such as Roasted Meats. If you fear a Relapse, purge from time to time with Hydragogues, such as *Falapin Powder*, from 10 gr. to 30, *Rosin of Falap*, from 6 to 12, *Scammony*, from 8 to 15, and Ptisans made with the Diureticks, such as Roots of *Dwarf-Elder*, Iris, *Gratiola*, *Wild Cucumbers*, *Leaves of Chervil*, *Roots of Butchers Broom*, with a thousand of the like nature to be found in Authors.

REMARKS.

Bartholine, Cent. 3. Hist. 23. relates that a young fellow of 20 years of Age, happened to have a *Hydrops Ascites*. The Swelling was so extraordinary large and shining, the Water forced its way through the Pores of the Skin to that degree, that all the Clothes and Linen round was wetted with it, the Tumour abated, and after returned, which Relapse so weakened the Patient that it killed him. In *Cent. 3. Hist. 81.* he tells us a Child not a year old dying *Hydropick*, had the Skin spotted with a purplish brown colour; about the Stomach, Navel and Groin. Fifteen pints of Water were drawn out of its Belly, which was very Serous, Bilious and Stinking. The *Omentum* was all putrefied, the Stomach and Guts inflated. It did not appear there ever had been any *Pancreas*. The *Mesaraick Veins* were filled with a shining glutinous matter: The Spleen was Monstrous, had three Appendages, adhered to the left Kidney, and the Kidneys were very large, the Liver had lost its Red, and was become Ash-coloured discharging abundance of Serosities upon cutting it; the Cavities of the Liver and Spleen were filled with Water. The Bile in the Gall-Bladder lookt bright like Gold, the *Pericardium* was of the same Colour, and very much distended by a quantity of stinking Water contained in it. Not one drop of Blood was to be found in the Heart, or any of the other *Viscera*, no Blood in the *Vena Cava*, nor the great Artery, but a Water like the washing of Flesh. The Lungs were flaggy and putrid. *Blasius* relates, that having opened a young Girl of two years of Age, who dyed of a *Hydrops Ascites*, he drew out twenty nine pound of Water all contained between the Muscles and *Peritoneum*, the *Viscera* being intire.

We must not imagine that all swellings of the Belly arise from Dropsies, since the last nam'd Author assures us, he had opened a Woman whose Belly was as hard as a Stone; and when she was dead, was dry all over. The Skin, Muscles and *Peritoneum*, made only one deformed Lump; nor to be distinguished from the Muscles. The parts all together, were more than half an Ell in thickness, from the Navel to the bottom of the Belly. The External Parts were all Cartilaginous, and the Internal all full of Cancrous Ulcers.

C H A P. VII.

Of the Operation of the Hydrocele.

THIS Operation is an opening the Scrotum, to let the Water out of it.

THE CAUSE is a præternatural quantity of Water contained in it. The reason of its collection there, is the same we have assigned as the Cause of a *Hydrops Ascites*, whither we shall remit the Reader. The *Hydrocele* sometimes follows upon an *Ascites*, in which case we must not think it always proceeds from the Water running through the Productions of the *Peritoneum*; for then it would ever be lodged within the *Tunica Vaginalis*, whereas it frequently finds a Passage between the *Peritoneum* and the Muscles, and so gets into the *Scrotum*. Sometimes the Water is contained between the proper Membranes of the Testicle, or included in a *Cystis*, sometimes part is in the *Scrotum*, or a Membrane adhering to it, which makes a Double *Hydrocele*.

If the *Hydrocele* be the effect of a *Hydrops Ascites*, the Operation will be useless; because the constant Defluxion of Waters will still produce it anew.

Hydrocele's not ensuing on Dropsies, ordinarily proceed from the slow Motion of the Blood or its Dissolution, as we have above proved. Falls and Contusions may sometimes cause them, because the Blood stagnating in the part, gives the Serosities time to separate. We may assign the various Circumvolutions of the Spermatick Veins, as another Cause, which numerous windings hinder the prompt circulation of the Blood, and give the Redundant Serum liberty to sink into, and distend the *Scrotum*.

THE SIGNS of a *Hydrocele* are the swelling of the Cods, and the Transparence of the Tumour. *Hydrocele's* are often mistaken for true *Hernia's*; but we shall assign a sufficient number of Marks to distinguish the one from the other, in the Operation of the *Hernia*.

The OPERATION.

This is performed with the Tap, Lancet, Seron, or Potential Cautey.

A Compleat Body

For making it with the Tap, let the Patient be standing or sitting, and let a Servant compress the *Scrotum*, keeping back the Testicle, to prevent its being hurt with the point of the Instrument. When the Water is let out, draw out the *Cannula*, and the skin of the Testicles which contracts, will exactly close the Aperture.

When the *Hydracele* is only on one side of the *Scrotum*, it is most commonly within the Tunicks of the Testicle; and is very painful, by reason of the great Tension of the Membranes. To make the Operation in this Species of *Hydracele*, make the Aperture with the Lancet, and let it be deep and large enough to let the Water out, and apply proper Remedies to discuss the Membranes swoln by the Humours soaking into them.

The Aperture must be on the side of the Cods, and instead of the Lancet, may be made with the Potential Cantery; which on this occasion is preferable; because there is less danger of hurting the Testicle in this way, and it insensibly wasts the Membranes, which in time will be wholly consumed by the Suppuration. Lay a Caustick on the place you design for your Orifice, and afterwards open the Escar with a Lancet. The Waters being apt to blunt the point of the Caustick, if the first do not make an Escar sufficient, apply more. When the Slough is separated, fill the Wound with Dossils, and leave those which cover its Bottom, four or five days without taking them out. The end of letting them lie in so long, is that the matter may grow sharp, and sooner waste the Tunicks which contain the Waters. Your first Care must be to procure a good Digestion, and next to look well to the Healing of the Wound. In very young Children, the Aperture is best made with the Lancet to discharge the Water all at once.

To make the Operation with the *Seton*, pass a Skain of Thread through * a Packers Needle, and pass this through the *Scrotum*, drawing the Thread now and then to discharge the Water. This way can only be practised in the *Scrotum*; for if you should attempt it in the *Tunica Vaginalis*, the rubbing of the thread against the Testicle, would cause a violent Inflammation. I think the Lancet or the Tap preferable to this.

* Needles are made for the purpose much after this Form; and to be had at every Instrument-Makers,

In all Cases where the Cods require Suspension, you must make use of a Bag-Truss. This is nothing else but a Bag with four Tails or Straps, the upper of which go round the Patients Body, the lower between his Legs, and are fastened behind to the Waistband. This Bag must have an Aperture before for the Yard to pass through.

You may make a Suspensory Bandage which shall be more commodious, and keep the Cods up better, after this manner. Take a piece of Linnen Cloth three Inches broad, and about four or five Inches long, divide it below to the middle, then sow above on each side two little strings, near an Inch broad, and long enough to go round the Patients Body, and two more below to pass between the Thighs, and be tyed behind to those which go round the Waist; these must cross each other in passing between the Legs.

THE CURE. Apertion being no more than a palliative Cure, you must have recourse to a good drying Diet, such as are all Roasted Meats. Give Diuretick Ptisans made with the *Roots of Dwarf-Elder, Iris Gratiola, Wild Cowcumber, Leaves of Soldanella and Chervil, Roots of Butchers Broom, Polypody, Garden-Flage, Christal Mineral, Saffron, &c.* These Ingredients infused in White-wine make an excellent Medicine, as we have noted in the Chap. of the Dropsie. Purgatives which colligate the Blood, have a good effect, as *Jalap, ʒi. in any Decoction, Resin of Jalap gr. 12. in Conserve of Roses, or in a Decoction or Resin of Scammony, from 10 to 18 gr. after the same manner.* Sudorificks are useful, as *Powder of Vipers 15 gr. with as much Diaphoretick Antimony in Carduus Water, ʒiij. or iv. or Volatil Spirit of Sal Armoniac, from 6 to 20 drops. Volatil Salt of Tartar and Vipers, from 6 to 16 gr. with an Infinity more to be found in the best Modern Authors, such as L' Emery, Charas, Etmuller, &c.* Lastly, Aperitives are very serviceable, such as *Spirit of Salt, from 4 to 10 Drops, Salt-peter refined, from 10 gr. to ʒi. Sal Armoniac, from 6 to 24 gr. the Mercurial Panacea, from 6 gr. to 20, &c.*

REMARKS.

Fabricius Heldanus, Centur. 1. Obs. 48. Relates a History of a Man of 40 years of Age, attackt with a *Hydrops Ascites*, which discharged it self so largely on the *Scrotum*, that it mortified, and the Slough coming away left the Testicles bare. The great efflux of Waters cured the Person of his Dropsie, and Nature reinvested the Testicles with a Callous

cover, which served instead of the *Scrotum* to them, and the Patient after his Recovery had several Children. *Bartholin Cent. 2. Hist. 64.* relates that a certain Abbor being Hydro-pick, the Waters fell into the *Scrotum*, which grew exceeding large. The Surgeon made an Aperture greater and deeper than was necessary; which caused a Gangrene of the Part. The Patient found the Waters ascend towards his Throat, which took away his Speech, and the *Scrotum* mortifying, he soon after dyed.

C H A P. VIII.

Of Hernia's.

Hernia's are *Præternatural Tumours, caused by the falling down of some Viscera of the lower Belly, or a Flux of Humours.*

Hernia's differ according to the parts affected. If this swelling is in the Navel, it is called *Exomphalos*, if in the Groin *Bubonocoele*; if in the *Scrotum* it is a perfect *Hernia*; if it happen in other parts of the Belly, it is called *Hernia Ventralis*; if caus'd by the falling of a part of the Guts *Enterocoele*; if by the *Omentum* *Epiplocoele*, if by the Gut and *Omentum* both *Euteroepiplocoele*.

Hernia's are again divided into *Genuine* and *Spurious*. They are *Genuine* or true, when the swelling is made by a Part; and *Spurious* or *Bastard*, when they proceed from Waters, Wind, &c. The first are called *Hydrocoele*, the latter *Pneumatocoele*, which shall all be explained hereafter. Some again are *Compleat*, when the parts fall into the *Scrotum* in Men, and the Lips of the *Pudendum* in Women; others *Incompleat*, when they do not fall lower than the Groin.

The Causes are *External* or *Internal*.

The *External* Causes are Violent Blows, Rude Shaking, Long Races, Dancing, Leaping, continual Bawling, Frequent Debauches with Women, and generally all violent Exercises. The *Internal* Causes are first the copious Defluxion of Serofities separated from the Glands of the Guts, Groin and *Peritoneum*, which plentifully watering these parts, dispose them to yield to all Impulsions. The second cause is the great quantity of Fat and Oleous parts in the *Omentum* and Mesentery

tery, which smear and grease the Fibres of the *Peritonæum*, and by this means soften, relax, and dispose them to dilate and yield to the Motion, and pushing forwards of those parts which form *Hernia's*. For this reason all Persons who eat much Oyl in their Diet, are more subject to inconveniences of this kind than others. Windy Dyet contributes very much to the rise of *Hernia's*; for the included Air by its Rarefaction distends the Guts, which push forward on the *Peritonæum*, and enter its Productions.

Hydropical Bodies, and Bigg-bellied Women are subject to *Hernia's*; because the Distention of the Womb in one, bears up the Guts against the Diaphragm, and forms an *Exomphalos*, and the Water in the other soaks and relaxes the *Peritonæum*, and makes it incapable after that is exhausted of resisting the Guts; which force its inner Membrane thro' the Rings of the Muscles, and form a Bag which is more or less elongated, as the impulse is more strong or feeble. Whence it appears this Bag is not formed by the Productions which cover the Spermatick Vessels. The *Hernia Ventralis* happens in the *Aponeurosis*, [or Tendinous Interstices] of the streight Muscles, the Belly rising in such a manner, that it cannot avoid dilating those weak parts, and sometimes bursting them.

This Species of *Hernia's*, do's not happen so often as the *Bubonocoele*; because the Parts and Humours by their own weight, have a natural tendence towards the Groin, and the Rings of the Muscles being open, the Parts easily slip in where they find little Resistance.

THE SIGNS. In the first Species of *Hydrocele*, the Water lodged between the Membranes of the *Scrotum* make a slight Tension a considerable Tumour, and a moderate Weight. You may perceive an Undulation by striking on the Swelling with your Hand, and the Transparence of the Water by setting a light behind it, the Skin becomes tender, soft and shining, without pain. In the second kind the Waters are within the Membrane of the Testicles, there is great Pain and Tension, the Weight is greater than in the First, the Skin is not so much distended, but has several of its folds remaining; it is for the most part on one side, the Fluctuation is deeper, and the Transparence of the Waters more obscure. These two Species may happen together.

The Signs of a *Sarcocoele* are a great Hardness, an intolerable Weight, an insensible encrease of the Swelling. If

there be no Rising in the Groin, it is a sign the Productions of the *Peritoneum* are free from Cancrous Ulcers.

You may distinguish the *Sarcocoele* from the *Hernia intestinalis*, the former being soft, and the latter hard. This Tumour is sometimes Schirrous, sometimes Malignant; when it is Schirrous, there is no sense of Heat or Pain; when it is Malignant there is both.

The signs of a *Varicocoele* are a great Inequality, Weight, Pain, Inflammation, especially if you use many Medicines to molest it. This makes a Man impotent, when it seizes both Testicles.

The signs of *Cirrococoele*, (which is a Dilatation of the external Vessels in opposition to the *Varicocoele*, in which the internal only are distended) are the same with the former, except that the Pain, Weight, Inflammation, are less; the Membranes of the *Scrotum* more distended, and the Swelling more apparent.

In the *Pneumatocele* the Swelling vanishes at some times, and upon striking sounds like a Drum, has no Weight, Pain, or Inflammation, is Transparent without changing the colour of the Skin, and the Wind is sometime perceived higher, and sometimes lower.

Recent *Hernia's* made by the parts are most commonly soft, without Inflammation or Change of Colour, and disappear upon the least thrusting them back, except they proceed from some external Cause, as Blows, Falls, or some indurated Excrements stop'd in the Gut, or the free passage of the Blood and Spirits into the Part be interrupted, which creates an Inflammation, often followed by a Mortification. For this reason the Surgeon must be careful not to handle these Tumours rudely, lest such ill consequences may ensue. If there be a Descent of the Gut without Inflammation, Strangulation or Adherence, the Swelling is Soft and Uniform, the colour of the Skin is not changed, and it disappears when the Patient lies on his Back; and when the Gut is reduced into the Belly, there is a discernible Noise. If the *Omentum* is the Cause of the Tumour, it is softer than if it be the Gut, and is not so easily thrust in, it is very uneven by reason of the Fat, and if it be prest with the Finger the Impression remains, the Resistance is the same as in a *Steatomatous* Humour; and there is great danger of Mortification, because the *Omentum* is spongy, and loaded with Fat. The Gut is inflamed, and the *Omentum* turns livid upon the least Alteration.

The

The most dangerous Accidents which happen in these sort of Swellings, are the Inflammation which is always attended with Pain, Fever, Strangulation of the Gut, and sometimes the *Miserere*, in which all the Excrements of the Body are forced up, and voided through the Mouth. This Symptom proceeds from the Fæces being too long retained in the Gut and hardened there, hindring the free supply of Blood and Spirits to the part, which increasing in Bulk suffers a Strangulation; hence follows the inverted Motion of the Intestinal Contents, the Lividity and Mortification of the Parts. This Discoloration happens when the Swelling has been too much handled and compressed, and the cessation of Pain discovers the parts to be Mortified.

In the *Bubonocèle* and perfect *Hernia* the Tumour sometimes disappears, and sometimes is permanent. If it disappears, it is a sign there is no adherence, and the Gut suffers no Compression. In this case Bandage and proper Remedies are sufficient for the Cure. If the Tumour be permanent, this proceeds from Inflammation, Adhesion or Excrements hardened in the Gut. Here nothing can be effected without manual Operation.

The Gut cannot contract an Adherence to any thing besides the Bag, which makes the *Hernia*, except it be corroded by some sharp Humour. This Bag adheres sometimes to the Sheath, which invests the Spermatick Vessels, at other times to the *Omentum*, the Rings of the Muscles, the *Dartos*, or the Membranes of the Testicle.

It is very dangerous when the Gut adheres to the Testicle, and if it be of any standing, it is scarce possible to cure it, without Amputation of the Testicle.

You may conclude the Gut adheres if the Tumour has not for a long time subsided, and the Patient feels great Pain and Weight in the Testicle.

If there be a Descent of the Gut into the *Scrotum*, and it be retained there for a long time without returning, it is probable that the Bag which contains it, is fixed to the Testicles by the glutinous Humours distilling from the *Peritonæum*, and the Membranes of the Testicles which being thickened by the heat of the Part, and drying, unite them very strictly, and make the Operation necessary to disengage them.

THE OPERATION.

The Operations of the *Bubonocoele* and the compleat *Hernia*, are in a manner the same, and for that reason, I shall comprehend them both in one Chapter.

To perform this Operation, oblige the Patient to lie on his Back, with his Hips a little raised, then pinch up the Skin which lies over the Swelling. A Servant must hold this at one end, and your self at the other. Then with a sharp Knife in your Right Hand, make the Incision on the Tumour following the fold of the Groyn; when the Skin is cut, the Fat appears, which you must tear off with your Nails or an Instrument, as well as the *Peritonæum*, for fear of cutting the Guts; and when you have discovered the Bag which makes the *Hernia*, tear it with your Nails or Instrument as before.

Sometimes this Bag is found full of Water, which accident must not surprize the Operator, who may be apt to fear, that Water issues from the wounded Gut. To remove this Apprehension, he must consider well the Signs which distinguish the Gut from this Bag.

The colour of the Gut is brownish, by reason of its numerous Blood-Vessels, it forms a sort of Arch, which is perceptible when it lies bare, and the Swelling is abated. The Gut is thicker than the *Peritonæum*, because it is composed of four Tunicks; but this last sign is Ambiguous, the Bag formed by the *Peritonæum* sometimes hapning to be of a considerable Thickness. A thick Fœtid Matter ever distills from the Gut when it is wounded, but that which comes from the *Peritonæum* is clear and limpid. If you draw the Gut to you it obeys, except it happen to adhere to the Neighbouring Parts, but the *Peritonæum* yields little. The Patient feels a dull Pain till the Gut be discovered. These are the signs which distinguish the *Peritonæum* from the Gut.

Sometimes the Gut does not adhere to the *Peritonæum*, and here it is you must shew your Dexterity to avoid engaging the Gut, which you must draw a little forth, when it happens to be exposed, to see whether it adheres to the *Peritonæum* and Rings, or not. When you are sure it is free in every place, manage it gently with your finger, to make it enter more easily; this is done to diminish its Bulk, and break the Excrements, which cause its Tension;

after

after this put it into the Belly with the two forefingers, thrusting them alternately into the Ring. But if the Strangulation be very considerable, dilate it with an Incision-knife on the furrow of the Director. It is the Ring of the External oblique, which being lower than the others, causes a Strangulation, because the Tendinous Fibres of the *Aponeurosis* of that Muscle, cannot recede to give place to the Carnous, and are more susceptible of Inflammation: for this reason only Scarifie that in this Operation. If you cannot introduce your Probe for the great Strangulation, draw the Gut to you, and put the forefinger of the left Hand above near the Ring, slip a small Incision-knife on the Nail, and make a Scarification there, to make way for the entry of the Director, just to cut the edge of the Ring.

For if you should proceed farther, you run a risk of cutting a small branch of an Artery, which passes through the *Aponeurosis* of the Muscle, which you must carefully avoid. You must cut inwardly without hurting the Teguments, because it is the *Aponeurosis* of the Muscle only, which causes the Strangulation. When all is over, replace the Parts in the Belly, and to make a firm Cicatrix, Scarifie the Ring which is Callous, if the *Hernia* be of any long standing.

The Operation of the Perfect Hernia.

To perform this, Let the Patient lie on his Back and make an Incision with a Knife through the Skin on the side of the Thigh the whole length of the Swelling, raising the Skin as before, you holding one end, and a Servant the other, separate the Lips of the Wound, and break with your Fingers or Fleam, the Coats which cover the Gut and Testicle. The Gut being discover'd, introduce a Director between the Membranes of the *Scrotum* and it, and widen the Aperture with your Scissers, which you must slide on the Furrow, and when you have laid bare, disengage it from the Testicle, to which it adheres. Next let a Servant hold up the Gut, and draw it gently with his Hands towards the *Os pubis*, whilst you lightly draw the Testicle with your Hand, to get the liberty of breaking with a Fleam, or the point of your Knife, the Membranous Ties which unite the Testicle to the Gut.

But

But here observe if the Adhesion be very strict, it is more advisable to hurt the Testicle than the Gut, because that is not necessary to Life, whereas if the Intestine be cut, the Patient can hardly escape. You must have a great care likewise to avoid cutting the Spermatick Vessels, because the Flux of Blood will obstruct the Operation.

After you have separated the Gut from the Testicle, introduce the Director between the Skin and the Gut, and cut the Ring of the Muscle, which you must scarifie to deliver the Gut from its Strangulation, in case it should happen. In the last place reduce the Gut into the Belly in the same manner as in the *Bubonocoele*, and when it is replaced, command a Servant to press the Belly with his Hand, to prevent its falling out again.

It is a ridiculous Assertion, that the Testicle must always be extirpated after the Operation; for this do's not conduce to the Cure of the *Hernia*; on the contrary it prolongs it, puts the Patient to unnecessary Trouble, and deprives him of the means of satisfying the Duties of his Sex; nay, if the Testicle happen to be affected, it is most advisable to defer the Operation till the Fluxion be abated, in which space perhaps that may be cured.

Sometimes the *Omentum* alone adheres and covers part of the Testicle, and sometimes the Gut with the *Omentum* lying over it. In this case you must dextrously free the Gut from the Testicle, and leave a small portion of the *Omentum*, adhering to either of them, rather than endanger the hurting them.

The *Omentum* is almost ever corrupted, and for this reason a Ligature must be made, and the tainted part taken off. Sometimes indeed in Recent *Hernia's*, there is not time enough to admit of any alteration, and then you may replace it in the Belly without farther trouble. If the *Omentum* cleave to the Gut, and there be no change discernable in it, reduce both together without taking off any part of the former. If both together adhere to the Bag of the *Peritonaeum*, take off part of the *Peritonaeum*, rather than touch the Gut; and if it cannot be otherwise disengaged, as when the *Omentum* adheres to the Bag, it is better to take off part of the last, than the first. But the *Omentum* being unable to remain long in that State without being altered, it seldom happens but that some part is requisite to be cut off.

In making a Ligature on the *Omentum*, you must be careful not to make it too straight, because it easily cuts through it, by reason of its softness. You must turn the Thread several times round, first passing the Needle through its Substance.

THE DRESSING. Thrust into the Wound a long Tent of Linen capped at one end, and flat at the other; for if you use Lint only, the Guts which are always driving down, will not fail to dilate the Ring, and hinder a good *Cicatrix*, and the Intestines will fall down again after the Wound is healed. Here observe to pass a Thread through your Tent to draw it out at pleasure, and hinder it from sinking into the Belly. Next fill the Wound with Dossils armed with good Digestives made with *Turpentine and Yelks of Eggs*, over them lay a Triangular Emplaster, and a large Compress of the same Figure; Embrocate well the Neighbouring Parts with *Oyl of Roses*, apply good Defensatives to the *Scrotum*, and Hypogastrick Region made of Compresses dipt in *Oxycrate* very hot. Lastly, keep up the *Scrotum* with a Bag-Truss, and make the Bandage called *Spica*.

This is made with a Roller rolled at one end, which must be six Ells long, and three Inches broad. You must begin to apply the end of the Roller on the Wound, then pass on to the Back, turning to the Belly, thence over the Wound, thence between the Thighs, thence over the Wound, thence behind the Back, thence over the Wound, then over the Belly, then over the Thigh, then between the Thighs, then over the Wound, then behind the Back, continuing to make these rounds till the Roller is spent; and lastly fasten it with Pins at the extremities; every time the Roller passes over the Wound, you must leave small Interstices, in which a third part of the Roller beneath is seen. The whole figure something resembling an Ear of Corn, from whence this Bandage derives its Name: We have described Trusses for the *Scrotum*, in the Operation of the *Hydrocele*, where the Reader may take the pains to turn to them.

THE CURE. The Wound must be treated with good Digestives to procure Suppuration, and a firm *Cicatrix*. When the *Pus* becomes laudable, that is white, of a good consistence, and without any ill scent, you must deterge and cleanse it like all ordinary Wounds. The Patient must be nourished with good Broths, and from time to time Clysters given, with other general Remedies, as the nature of the Symptoms shall require.

REMARKS.

Fabricius Hildanus, Cent. 2. Obs. 81. Relates that a certain Gentleman named *Daniel de Chalou*, who for several Years had been afflicted with an *Enterocoele*, chanced to use some violent Exercise, upon which the Gut fell into the *Scrotum*, whence came great pain in his Belly, continual Vomiting, great Restlessness, and a Retention of the Urine and Excrements. Having neglected to take any care for remedying this, all the Symptoms encreased, by reason of the violent pain in the Belly. After two or three days he fell into a *Coma*; upon the fourth day the Urine was perfectly red, and the Patient made it without Difficulty. When the Patient was ready to expire, the Urine resumed its natural Colour and Consistence.

C H A P. IX.

Of the Operation of the Exomphalos.

THE Exomphalos is a *præternatural Tumour of the Navel, made by the extrusion of some of the Viscera.*

The Operation is an Incision made on the Tumour to restore the Parts to their Natural place.

THE CAUSES. To have a right Knowledge of the Cause of this Distemper, it is requisite to consider the Structure of the Navel. This is formed by the uniting of the Umbilical Vessels, which obliquely sliding into the *Peritoneum*, are accompanied with that, and both together striking through the *Linea alba*, terminate in the Surface of the Skin. The Ways through which these pass, are no less visible in the *Fetus*, than the Rings in the Muscles of the lower Belly in Adults; but after the Birth the Vessels dry, shrink, degenerate into Ligaments, and are no longer pervious, and the contiguous parts encreasing; while these remain unalter'd, the Navel is necessarily pulled in by them. The difference between Umbilical and the Spermatick Channels in the latter are permeable distinct, and easily separable from each other. The former impervious, contracted, and the Tendinous Fibres of each *Aponeurosis* so interlaced with each other, they seem to compose one Continuous

nous Body. Besides we may observe, the Navel is encompassed with a Circle destitute of Carnous Fibres, for half a Fingers breadth round, all which circumstances concur in forming an *Exomphalos*, and differ very little from those described in the *Bubonocoele*.

THE SIGNS. If the Gut is the cause of this Swelling, it is called *Enteromphalos*; if the *Omentum* *Epiplomphalos*; if Water *Hydromphalos*; if Wind *Pneumatomphalos*; if Flesh *Sarcomphalos*; and *Vaicomphalos* if it be the Vessels. If it be a *Hydromphalos*, the Swelling is pliant, and yields to the impression of the Fingers; you may discover it to be transparent, by setting a Candle behind the Water; it makes a small noise if you strike on the part, and you may perceive its Motion. The *Pneumatomphalos* yields to the Fingers instantly, returning to the same Magnitude; resounds if you strike on it, and it is always equal, and of the same Figure in whatever posture the Patient be put. The *Sarcomphalos* is hard, the Swelling is large, and does not yield to compression. The *Enteromphalos* is a Tumour a little hard, with Tension, narrow at the Basis, and Swelling out if the Patient holds his Breath; it abates if you press it with your Hand, making a little noise in the Subsiding, which is more sensible if the Patient be laid on his Back when the Compression is made. In the *Epiplomphalos*, the Tumor is softer and larger on one side than the other. Its Basis is larger, and in Compressing it subsides without the least noise.

This is more dangerous if an Inflammation arise and create an Abscess, which coming to break the *Viscera* force out of the Belly. Infants are more easily cured of these Diseases than Persons advanced in years, and Ancient People seldom recover. Children have their Flesh more soft and spongy than Adults, and these still more than old Bodies, which very much assist the Cure.

THE OPERATION.

Before you begin, you must remove all impediments of the Reunion of the Parts, such as Inflammation and Repletion of the Guts with Excrements or Wind.

The Inflammation must be discussed by Bleeding, and Unction with Oyl of *Roses*, *Lilies*; the Guts cleared from Wind or Excrement by Clysters, with Decoctions of the Emollient Herbs, as *Mallows*, *Marsh-Mallows*, *Pellitory of the Wall*, with a thousand others of the like nature, amongst

mongst the rest; you must not forget to put in *Aniseeds* bruised, and give the Clyster pretty hot. After these Preparatives, proceed to the Operation.

To perform this, the Patient lying on his Back, pinch up the Flesh which covers the Tumour, one end of which a *Servant* must hold, and your self the other, then with a sharp Knife make an Incision the length of the Swelling, taking care not to hurt the Umbilical Vessels, especially the Vein which suspends the Liver, because that *Viscus* not being suspended, would compress the *Vena Cava*, and totally intercept the Circulation of the Blood. If the Skin be so Tense that it cannot be pinched up, make an Incision with a sharp Knife to the Fat, which you must tear with your Nails or Fleam; for you must not make your Incision deeper, for fear of wounding the Intestines. When the *Peritoneum* is laid bare, draw it up with your Nails, to make a small aperture with your Scissers, then put the forefinger of your left Hand into this aperture, to guide the point of the Scissers or Knife, and so enlarge your Incision.

If the *Omentum* adheres to the *Peritoneum*, disengage it, directing your Knife more toward the former than the latter. If the Guts adhere to the *Omentum*, you must be careful in freeing them not to hurt them, leaving some part of the *Omentum* cleaving to them. Sometimes there is a Carnous Mass appended to the Gut, which must be removed as well as all that part of the *Omentum* which is corrupted; in order to this make a Ligature in the sound part, and all the rest with your Scissers or Knife. Next reduce all the parts into the Belly, and to procure a firm close Cicatrix, Scarifie all round the Lips of the Wound. Then make the interrupted Suture, observing all Circumstances directed in the *Gastroraphia*, or stitching of the Belly.

THE DRESSING. Apply to the Wound a Pledgit dipt in some Balsam or Spiritous Liquor, Embrocate the Belly round the Navel with Oyl of *Roses*, with a little Spirit of *Wine*; Then lay on a good Emplaster, and over this Compresses well wetted in some good Defensative, and keep all on with the Napkin. This is doubled lengthways into three Folds, and then Rolled at both Ends, its middle applied on the Part affected, and so brought round the Body pinned at the end, and kept up by the Scapular. The manner of making and applying it, is described in the Dressings of the *Gastroraphia*.

A Machine to check the Motion of the Belly described.

* Since nothing more impedes the Coalition of Wounds of the lower Belly than its continual Motion, nothing can be more serviceable here, than some Machine adapted to check this, and such an one may be made after this manner. Double a pretty thick Iron Wire, in' such a Figure it may embrace the Waist. This Machine must have two Cavous Plates at each end, in short it must be like that Women use to stiffen their Commodes with. This is to be applyed in such a manner behind on the Loins, that both Plates may extend forwards, and press by their elasticity the sides of the Belly, which Compression prevents the Dilatation of the Wound. This Instrument must be covered with Dimety or some such soft Matter, and stuffed with Cotton like Trusses to prevent galling.

In an *Exomphalos*'s arising from Inflation, or when the Parts sometimes retire into the Cavity of the Belly, few Persons will be perswaded to submit to the Hazard and Trouble of the Operation.

A Machine for the Exomphalos.

The Machine I am now about to describe, is contrived to prevent the Parts from intruding into the Tumour, and differs very little from a Truss with three Branches. The form of it is thus. Take a thick Steel Wire, bend it and make a Truss like those commonly used in double *Hernia*'s. Then make another Branch which is to be fixed to the knob on each side, to which fit a round knob to be applyed to compress the Tumour on the Navel. This Instrument is proper for those Persons who have a *Hernia* on both sides, and an *Exomphalos* with it, and is more commodious than any Bandage, which in compressing the Belly obstructs Respiration, whereas these by their Spring complying with the al-

* Fabricius ab Aquapendente makes a Truss of double Dimety or Linen Cloth with a hollow Plate with a round Cake, on the Part which lies on the Navel, in the Center of which is a round knob of Lint which goes into the Breach or Dilation of the Navel, to hinder the Extrusion of the Guts, and on this a proper Cerate or Glutinating Emplaster is laid, and so bound streight round the Abdomen from the Truss, so binds over the Shoulders to hinder it from falling down, and Straps in the lower part between the Legs, to hinder it from rising up.

Our Country Man Wiseman in Ruptures of the Navel, makes a Bracer to lace in the whole Belly from the Cartilago Ensisformis to the Os Pubis, under this on the Navel. He puts Empl. ad Herniam with a quilted Bolster over it wrought in Sole Leather, and tacked to the Bracer. V. Wisemans Chirurgery, Lib. 1. c. 8. from Sect. 35. to Sect. 39.

ternate rising and falling of the Part in that Action, are not liable to the same inconvenience.

THE CURE. Digest the Wound with good Balsamicks to procure a firm *Cicatrix*, and continue to treat it after the usual manner; prescribe the Patient a good Dyet, nourishing him with proper liquids, frequently interposing Clysters.

If the Tumour arise from a Mass of Water collected there, attempt to disperse it, chafing the part well with *Oyl of Turpentine*, applying hot Bags filled with *Camomil* and *Elder Flowers* boyl'd in *Wine*, or other proper Discuti-ents.

R E M A R K S.

Antionette Fautras, a certain Woman of the Village of *d' Ambigné* in the *Maine*, being big with Child, attempting to lift a Bushel of Corn, with the vehement straining burst the *Peritonæum*, and the Guts instantly rushed into the Navel with as great a Noise, as the going off of a Pistol, notwithstanding which Accident, she was delivered of a Boy at her due Term, and that with less Pain and Difficulty than of her former Children, and after lived and enjoyed her Health very well.

Blancard relates the History of a Child born with a Tumour on the Navel as large as both Fists. The Navel-string as big as the little Finger, and above an Ell and an half in length, and so Transparent, the Guts were visible thro' it. The same Author mentions a Child born with his Guts hanging out, which lamentable Accident he tells you was occasioned by the Mothers having seen the like Spectacle in a Cat run over by a Coach, a little time before her Delivery.

C H A P. X.

Of Castration.

THIS Operation is an *Amputation of the Testicle.*

THE CAUSE. Divers Causes may happen where all other Methods will be ineffectual: As for instance, when the Testicle adheres firmly to the Gut, and cannot be separated without loss of Substance: When in great Contusions the *Vessels* and *Vesiculæ* are crushed, and the influx of the Blood is intercepted: When there is a Varicose Swelling which cannot be dissolved by the usual Applications, or lastly when the Part is infested with some Excrescences of long standing.

These Excrescences are sometimes in the substance of the Testicle, and sometimes on its Membranes only; and seem to be form'd out of the more Oily and Viscid part of the Blood, imported by the Spermatick Arteries, which escaping through the Porosities of the Vessels, is harden'd and condensed by the heat of the Part: This Extravasated Matter being lodg'd in the small Tubes, grows Acrimonious, corrodes, huffs up and distends them, and so produces Fungous and Cancrous Swellings.

When the external Membranes are affected, they communicate the Cancrosity to the Productions of the *Peritonæum*, and sometimes it extends to the parts contain'd within the Cavity of the Belly: But in this case the Operation is useless, since not being confined to the *Tunica Vaginalis*, you must destroy the Vessels, Rings, and other Parts contained in the *Hypogastrium*, to extirpate it.

Whatever is apt to cause obstructions, may create an Inflammation in this Part: Thus Seed infected with the Pocky Malignity, sometimes ferments and tumefies the Testicles.

If a Compleat *Hernia* made by Descent of the Gut, happen when there is any Ulcer or Carnosity in the Testicle, the Sanious Matter issuing from them, excoriates the Gut, and glews it so firmly to the Testicle, that it is impossible to separate them without taking off the latter. Contusions proceed from some external Cause, such as Blows, Falls or Crushes, which Accidents break the Vessels, and the Blood

and Humours stagnating in the Parts create Tumours, Abscesses and Ulcers.

THE SIGNS of an Adhæſion of the Teſticle to the Gut, is manifeſt to the Naked Eye, when part of its Subſtance is deſtroyed, and taken off to free the Gut, and make the Operation in a perfect *Hernia*. The Sign which without opening the *Scrotum*, demonſtrates the adhæſion of the Teſticle to the Gut, is that the Gut has remained for ſome time in the *Scrotum* without re-entring the Belly, which yet is not very certain. You may conclude the Teſticle is bruifed, if the Patient feel a violent Pain, and after ſome blow or crush it ſwells. Excreſcences are diſcerned by their Bigneſs, Weight and Hardneſs.

Swellings of the Teſticles are to be feared, becauſe Abſceſſes and Schirroſities frequently follow, if Reſolvents have been omitted in the beginning. Inflammations of the Teſticles are dangerous, becauſe they uſually terminate in Abſceſſes, and ſometimes gangrene.

There remain frequently Schirrous Swellings after Concuſions, which incommode the Patient all his Life, and ſometimes the Teſticle mortifies. If the Swelling be Hard, Schirrous, Painful, and Inflamed, or be of long ſtanding, and both Teſticles are affected, the Operation will be dangerous.

THE OPERATION.

Place the Patient on his Back, with his Buttocks raiſed higher than his Head, and his Legs ſtraddling, which muſt be held by two Servants.

Pinch up the Skin of the *Scrotum*, and let a Servant hold it at one end, and your ſelf at the other, make an Inciſion lengthways, (or without pinching the Skin, let the Inciſion be made on the Body of the Teſticle) Then free the Carnoſity from the *Dartos*, which inveſts the Teſticle without hurting the Cover of the Spermatick Veſſels, and make a Ligature betwixt the Rings and the Swelling. Cut about a fingers breadth below the Ligature, and take off the Teſticle with the *Sarcoma*, leaving the end of the thread hanging out of the Wound, without drawing down or compreſſing the Spermatick Veſſels, left you throw the Patient into a Convulſion.

If the Cancroſity ſpread it ſelf on the Productions of the *Peritonæum*, conſume the ſuperfluous Fleſh by Cauſticks, or waſt it with ſtrong Suppuratives before you proceed to the Opera-

Operation: When the proud Flesh is removed, and the Escar separated, make a Ligature on the Spermatick Vessels near the Rings of the Muscles, and so take off the Testicle. If the Ligature be made before the separation of the Escar, the Patient will be convulsed. If the Carnous Excrescence be moveable, and do's not adhære to the Testicle, free it and choose rather to leave some little part of this Excrescence remaining on the body of the Testicle than endanger hurting it. If any Vessels appear, make the Ligature before you cut the Excrescence off.

THE DRESSING. Fill the Wound with Dossils armed with a good Digestive, Embrocate with Anodynes, apply Compresses dipt in Defensative Liquors, as *Oxycrate* or *Red-wine* very hot, and lastly keep the Applications on with the Bag-Trufs described in the *Hydrocele*.

THE CURE. Digest the Wound for some time with *Turpentine*, and the *Yelk of Eggs*, to procure a good *Cicatrix*, and consume the remains of the superfluous Flesh. If you perceive any Inflammation, have recourse to Bleeding and Clysters. Be sure to keep the Wound clean, and when you obtain a laudable *Pus* begin to Cicatrize; the Patient must abstain from all things Salt, Acid, or Sharp.

R E M A R K S.

Riverius relates an Observation of a Man, who upon a fall from a Horse crusht his Testicles, which tumefied to that degree, the *Scrotum* was as big as a Mans Head. The Swelling suppurated plentifully, and there came forth Stones as hard as Flints. The Patient had a Fever and Thirst which encreast continually, Pustules broke out over all his Body, and his Strength decayed by degrees till he dyed.

Kerkringius assures us, he had seen a young Man who had no Testicles in the *Scrotum*, his Voice was very Musical, and charmed even the most insensible of the Pleasures of Musick. He happened to have a Fever about 18 Years of Age, felt a violent Pain in the *Scrotum*, and found two great Testicles fall into them, upon which he lost his fine Voice, which became like that of other Men.

C H A P. XI.

Of the Phymosis.

THIS Operation is an *Incision of the Prepuce, to give way for denuding the Glans.*

THE CAUSE which makes this Incision necessary, is a contraction of the Prepuce, which strongly compresses the *Glans* of the Yard, which except it be disengaged, becomes inflamed and mortifies.

This Imprisonment of the *Glans* is sometimes Natural, and proceeds from its being wrapt in the Prepuce, and not freed from it by any Venereal Exercise or Handling. When this Disease is Natural, the Prepuce forms several Wrinkles, between which a Tenacious Slimy Matter is lodged, which arises from the *Glans*, and glews the Prepuce very strictly to it, scarce leaving a Passage for the Urine. Sometimes this Disease is Accidental, and proceeds from some Inflammation, Cancre, Wart, Schirrosity, or Unskilful use of Corrosive Medicines; but whatever the Cause be, the free Circulation of the Blood is interrupted, the Part exceedingly inflamed, and the Fibres of the Prepuce very stiff and stubborn.

The vehement Pain proceeds from the thinness and exquisite sense of the Membrane of the *Glans*, which is composed of, and interwoven with a multitude of Nerves; which Structure renders it very sensible, when it is molested by any Pungent or Corrosive Matter.

THE SIGNS. This Disease is evident, the Patient finds great Difficulty in making Urine, has violent Pains, cannot uncover the *Glans*, and most commonly a Matter like Plaster is lodged between it and the Prepuce.

The OPERATION.

This must not be undertaken, till all other Remedies have been tryed, such as Bleeding, warm Baths, Digestives mixed lightly with some preparation of *Mercury* (and introduced between the Prepuce and the *Glans* with the end of the Probe) *Galens* Cerate, Emollient Injections, a small Ball of Lint insinuated in between the *Glans* and the Skin, Compresses dipt in *Oxyerate*, &c.

Observe

Observe here in all Diseases of the Yard, (and so in the use of these Medicines) it is very Commodious to lay it on the Belly, and keep it Suspended in this Posture by a small Bandage, the Description of which the Reader may find in its proper place.

If the Prepuce be firmly united to the *Glans*, which is known by the Skin not being brought over, and no Probe passing between it and the *Glans*, the Operation will be dangerous, and cannot be done without first disengaging the Prepuce from the *Glans*, and creating a great deal of Pain, and endangering a Mortification of the Yard.

When you judge the Case will admit of Operation, let the Patient stand or sit as you like best. Draw the Extremity of the Prepuce as far back as you can, and command an Assistant to keep the Skin down at the Root of the Yard, (that the Incision may reach exactly to the bottom of the *Glans*) then introduce a small Incision-knife, with a button of Wax on its point (to prevent wounding the part) under the Prepuce, and cut through it. If one Incision be not sufficient, make another on the opposite side.

THE DRESSING. Lay on the Wound a small Pledgit arm'd with some good Balsam, and over this a Compress in form of a Cross, perforated in the midst for the passage of the Urine; and keep these on with a narrow Fillet near three quarters of an inch broad. This Fillet must be of a sufficient length to cover the whole Yard by its Circumvolutions, have a hole made at one end, and the other end slit lengthways above an inch and a half. In applying this, pass the two Tails or Slit end through the hole at the other end, then draw it as strait as is convenient; make several Circumvolutions spirally, till the whole Yard be cover'd, and the Fillet spent, and then fasten it by the two Tails.

If you judge it necessary to cover the Pledgit with an Emplaster, make this of the same Figure, and let it be perforated in the midst like the Compress.

For the Patients ease, and to prevent the Inflammation of the Part, make a Linnen Case of an equal length with the Yard, and large enough to contain it with all its Dressings: Let this Case have a Perforation at the end for the passage of the Urine, stitch two small straps at the lower end on each side, and one to the upper, which may be long enough to be fastned to the Band which goes round the Waist to suspend the Yard, and prevent Pain and Inflammation.

This Case is of singular use to prevent painful Erection in Priapisms, Virulent Gonorrhæas, Heats of Urine, and other Diseases incident to this Part.

THE CURE do's not differ from the usual Method, in all simple Wounds. For instance, if any Inflammation arise, have recourse to Bleeding, Cooling Clysters, and a regular Diet, and when the Wound is incarned, Cicatrize it.

R E M A R K S.

Fabricius Hildanus, Cent. 4. Obs. 8. Relates the History of a young Man of 22 years of Age, who from his Infancy had a Prepuce of a monstrous Size, contorted before in such a manner, that in the emission of his Urine the stream was diverted on one side, and wetted his Cloaths. The Prepuce was not Membranous, as it ordinarily is, but a Carnous Substance, and when he made Water, a great part of the Urine was detained by it; to prevent which, he was obliged to draw the *Glans* out with his Fingers. This constant handling made the Yard swell prodigiously, and the inferior part commonly call'd the Suture, was exceeding Tenfe and Horney. The Author cut off this Prepuce close to the *Glans*, and the Patient was happily cured of this inconvenience. Before the Operation he had used all kinds of General Remedies, and now after it he applyed Restricting Powders to stop the Blood, and in order to keep the Yard streight, put a Pipe into the *Urethra*.

C H A P. XII.

Of the Paraphymosis.

THIS Operation is the Reducing the Prepuce over the *Glans*, when it is so far retracted, that it cannot cover it without the help of Manual Operation.

THE CAUSES. The Strangulation of the *Glans* is caus'd sometimes by a simple Retraction of the Skin, which forms a Roll round the Yard, and at other times by an Inflammation of the Prepuce, from some preceding Cancre or Tumour. The Yard is often exceedingly swoln, and there are two or three Rolls one over another, which mightily intercept the Refluent Blood. When this happens, it is almost
ever

ever attended with a swelling in the lower part of the Prepuce, fill'd with a reddish Water, rarified and converted into a windy Matter by the heat of the Part.

THE SIGNS of a *Paraphymosis* are a Tumour of the Yard and Rolls on the Prepuce. There is sometime an observable swelling under the Prepuce, filled with a reddish Water, which rises to such a height, that except you Scarifie deeply the tumified place, to give a discharge to the Part, the Yard necessarily Mortifies.

• The OPERATION.

To reduce the *Prepuce*, you must use both forefingers and both middle fingers. Place these beneath the Rolls, formed by the tumified Prepuce, and with the two Thumbs compress the sides of the *Glans*, to lessen its Bulk, and so draw on the *Prepuce*. You must not thrust back the end of the *Glans*, to make the *Prepuce* come over it; because it enlarges it self, which hinders Reduction. If the Inflammation be very great, and renders this Method impracticable, apply Compresses dipt in *M. Lemeries*, or some other Styptick Water, and when that is abated, proceed as before.

THE DRESSING is the same with that used in the *Phymosis*.

THE CURE. While the Disease remains, the Method of Cure do's not differ from that of the *Phymosis*.

Fabricius Hildanus informs us, he cured a *Paraphymosis* in very Plethorick Gentlemen by the following Method. In the first place to keep the Patients Body cool, he enjoyned him to shun all manner of strong Drink, purged him with Cholagogues, and bled him copiously in the Arm; then he applied a cooling Liniment twice a Day to the Region of the Kidneys, and the following Cataplasm as often to the suffering Part. *R. Barley Flower* ℥iv . *Powder of Roses*, ℥ij . *Pomgranat Flowers and Cypress Nuts*, ℥i . *Boyl the Ingredients in Rose and Plantain Water. Make a Cataplasm with these, with the Addition of Yelks of Eggs, which is to be repeated twice a Day.*

These Applications being continued for several Days, the Pain abated very much. But a great erection happening one Night, obstructed the Cure, and the Prepuce violently compressing the *Glans*, all the Symptoms encreased. Upon this he ordered him to forbear all Commerce with his Wife, not permitting him so much as to see her,

purged him with Chologogues, using outwardly the following Liniment. *R.* Oyl of Violets, Nenufar and Roses, ā ʒi . Oyl of Henbane by expreffion, ʒij . Camphire diffolved in Vinegar of Roses, ʒi . Mix thefe in a Mortar. Befides this he gave him a Dofe of *Laudanum* after Supper, after which he had better Repofe than ordinarily, and the Erection was lefs troublefom. He perfifted to give him *Laudanum*, which feldom exceeded two Grains, and outwardly to ufe the Liniment above described, and continue Cataplafms to the Part. The Swelling of the Yard abated foon, the Patient was cured, and had feveral Children after. But we muft not omit here his caution to young Practitioners not to ufe the Cataplafm above mentioned, if the *Paraphymofis* proceed from impure Embraces, left the Malignity of the Diftemper be repelled, and ill conditioned Ulcers enfue.

REMARKS.

Fabricius Hildanus, Cent. 3. Obf. 88. Tells us, a certain Smith of 40 years of Age of a Melancholick Habit, had a fmall Wart on the extremity of his Prepuce of the bignefs of a Vetch. This Man being Married, found a great and continual Pain in this Excrefcence upon the embraces of his Wife, which obliged him to forbear knowing her for thirteen Years. The Pain increafed by little and little, and at laft degenerated into a Horrible Cancer, as big as an Infants Head. The whole Yard became a Huge deformed Mafs of Flefh, with feveral Ulcers on its Surface, thro' which the Patient difcharged his Urine: The noifom fcent of this Cancer was fo great, that no one could endure to come near it. The Author made an Amputation of the Yard, and cured him perfectly.

C H A P. XIII.

Of Lithotomy or Cutting for the Stone.

THIS Operation is Incision made in the Perinæum, to extract the Stone through the Aperture.

There is no Animal, except Man alone, infested with this Disease.

THE CAUSE. The Ancients did believe the Stone to be formed by the more Viscid and Fæculent parts of the Blood passing off with the Urine, and settling in the Bladder. Hippocrates is perswaded, it proceeds from the more Terrestrial and Heavy parts of the Urine it self, which in too long a Retention of it, subside and sink to the bottom of the Bladder, like Sand in a Vessel of Water, and are there bound together by a thick slimy Matter, which compacted Mass, in process of Time encreases by the supply of new Materials. Fernelius conceives all Stones are first formed in the Kidneys, and fall from thence by the Ureters into the Bladder. This Opinion he founds upon an Observation, that he had seen no Person afflicted with the Stone, who had not before felt Nephritick Pains : This he farther confirms, by assuring us, that in most great Stones when broken, there is found a small Kernel in the center, of the same Colour and Consistence with the Stone, and of a Figure agreeing to the Basin of the Kidneys, and inclosed in a Case of a different Colour from it.

* But the Modern Chymists seem to me to frame the most plausible Theory of the Formation of the Stone in Animal Bodies. These Gentlemen in Analysing the Urine by Fire,

* Our Author seems to be mistaken in representing Helmonts Opinion of the Generation of the Stone : Spirit of Nitre and Spirit of Wine stir indeed, and that with great Heat and Tumult, but after combine and compose a Temperate Liquor, or Spiritus Nitri dulcis. The true Helmontian Hypothesis, is that the Duelech or Animal Stone is formed by a Volatil Salt coagulated by a Vinous Sulphur, which conjecture he forms on the famous Experiment of mixing Spirit of Wine and Spirit of Urine both perfectly dephlegm'd (for the least Aqueosity remaining, defeats the Tryal) both which Liquids instantly coagulate into a Hard, Dry Substance, which he calls Offa Alba. See Helmont de Lithiasi.

find in it two constituent Principles, viz. a Urinous Salt of a Volatil and Nitrous Nature, and pure Sulphur not unlike a Vinous Spirit. Now Experience shews us, That upon mixing Spirit of Wine and Spirit of Nitre, a *Coagulum* will result in an instant; it is very easie and natural to suppose, that the like Principles existent in the Urine, leaving their Superfluous Phlegm, may unite, precipitate, and produce the like effect.

Van Helmont do's not think the Principles of the Urine alone sufficient, for the Production of the Stone; but adds a Petrifick Ferment, which he places in the Kidneys and Urinary Vessels, and reckons up as a third Agent, required to fix and coagulate the former. *There is no Transmutative principle in Nature*, says that Author, *without a Ferment; the Intestine Motion of the Particles of the Urine, is not the immediate Cause of its Corruption; its Putrefaction do's not arise from any vitious Disposition of the Urine, but from a peculiar corruptive Ferment residing in the Kidneys, and other Vessels.* This he illustrates by the Similitude of a Vessel, in which any Acid Liquor has stood for some time, which coagulates and sours Milk; by Leaven which ferments Dough, and by the taint of a Musty Vessel, which alters and corrupts Wine, or any Liquor put into it. This Ferment which for its fineness and subtilty, bears some Analogy to the Odoriferous Steams issuing from scented Bodies, he calls it *Odor* or *Scent*; and of such a Nature he pretends the Ferment is, to whose Petrifying Influence, he ascribes the Origin of the Stone; and to confirm the existence of such a Ferment, he alledges this Experiment, that Urine will sooner putrefie in a Vessel tainted with it before, than in another which is clean and new.

Having laid down the necessity of a peculiar Ferment to perfect this Work, he proceeds to Explicate the manner how it is performed. He assures us, he has found in a Spagyricall Examen of the Urine a Nitrous Spirit, which he terms the Coagulator, and another Spirit not unlike Spirit of Wine. Besides these, says he, *There is in Urine a Terrestrial Scytick Spirit*, which by the Assistance of the corruptive Ferment, is volatilized and imbibed by the Urinous Spirit, and these two uniting, excite and put into Motion the Vinous Spirit, which before lay dormant in the Pores of the Urine. At last after some conflict and mutual Action they combine together, Præcipitate and Form a Stone in the midst of the Liquor.

Liquor. From hence he infers, Stones are form'd in an Instant, and grow gradually; tho' sometimes too he supposes they receive a considerable Addition in a Moment of time.

Ill Diet conduces much to the generation of the Stone; for instance, all Spiritous Drinks, Sharp Sauces, Milk-Meats, Fruits, Rye-bread, and the like; the latter upon the account of their Foulness, and the former upon the Account of their Spiritous parts. The one furnishes Materials for the Stone, and the other the Petrifick Ferment. Nature too oftentimes as well as Diet, has a share in this matter, and the Stone proceeds from some Petrifying seeds we inherit from our Parents, and keep all our life after.

THE SIGNS. The Stones found in Humane Bodies differ very much, as Small, Great, Smooth, Unequal, Flat, Round, Oval, Square, Hollow, Light, Heavy, Hard or Soft; some have Kernels, others not; some are White, Gray, Red, Black, Brown, or of other Colours; some adhere to the Parts, as the Sides, Bottom or Neck of the Bladder, others are loose; some are in the Kidneys, Ureters, Bladder or Urethra; some are included in Cystis's, others not. In short, they are found in all parts of the Body.

If a Stone be lodged in the Kidneys, there is an Inflammation, a violent and fixed Pain, (which encreases if you press the Part with your Hand.) There is a Fever and Suppression of Urine, which destills drop by drop, and sometimes is Bloody, which proceeds from the fretting of the Vessels by the growing Stone. Muddy and Purulent Urines, discover the Blood to be Extravasated, and an Abscess in the Kidneys. In this case Vomiting, a Stupor of the Thigh and Leg ensue, and the Patient cannot endure to keep his Body straight, the Testicle of the same side is retracted into the Groin, and sometimes Pus is evacuated with the Excrement; for the purulent Matter corroding the Gut, runs thro' it, and passes off with the Fæces.

The Communication between the Nerves of the Kidneys and Stomach, and the agitation of the Spirits in the Carnous Fibres of the Stomach by the Inflammation of the Kidneys, are the causes of the Vomiting.

The Kidney lying on the Head of the Muscle *Psoas*, compresses and inflames it, and this inflamed Muscle presses the great Trunk of the Nerves, (which passes through its substance, and is distributed to the forepart of the Thigh and Hip,) and from hence proceeds the Stupor, because the free influx of the Spirits is interrupted. The *Psoas* and Iliac Mus-

Muscle contiguous to it being inflamed, (which two Muscles are the Benders of the Thigh) they cannot obey or follow the motion of the Extensors; and this is the reason the Patient cannot keep himself erect, without enduring vehement pain. The Iliac Muscle being united to the *Cremaster*, communicates its Inflammation to it, which causing a contraction of the Fibres of the latter, the Testicle must of necessity ascend to the Groin.

But after all, these Symptoms concurring are not sufficient to give us an absolute assurance there is a Stone in the Kidneys, since they all may attend an ordinary Inflammation of that part, as in the case of Nephritick Colicks.

We discover that there is a Stone in the Bladder, by a lively burning pain in Pissing, and the Urine coming forth by drops, and after divers intervals, as in the Strangury.

The Stone sometimes stops the Neck of the Bladder, and sometimes wholly blocks it up, according to the several Motions it receives from the Urine; and this is the cause of these Intermissions. When the Bladder is evacuated its sides rub on the Stone, which grates them by its hardness and inequality; and from hence proceed great Pains after Urining, and sometimes drops of Blood. The Patient feels an itching in the *Perineum*, which is continued to the extremity of the *Glans*, and obliges him to rub it: This sometimes happens from sharpness of Urine. The weight of the Stone is often felt, and the irritation of the Fibres sometimes causes an involuntary Erection of the Yard. The Urine is sometimes White, sometimes Bloody, Thick, Turbid, Muddy, and full of Sand.

When the Urine is very clear, and there is Sand at the bottom of the Urinal, this is a sign of a Stone in the Bladder. If the Stone extracted be polite and smooth, it is a sign there are more, by rubbing against which this smoothness is caused.

If the Stone be very large, and rests in the Neck of the Bladder, it becomes equally large with its bottom. When it fixes to the bottom of the Bladder, and is contained in a *Cystis*, the Patient may carry it all his Life-time without any notable inconvenience, or the appearance of any of the signs above recired.

Among the Diagnostick signs, there is none more certain than the Resistance of the *Catheter*, and the discernable noise from gently striking on the Stone.

The

THE OPERATION.

This must not be undertaken, till you have a very good assurance of the existence of the Stone in the Bladder.

To obtain a certainty of this, introduce your finger into the *Anus*, and turn it towards the *Pubis*, then bend it, at the same time pressing the bottom of the Belly with your other Hand, and if there be a Stone, you will feel it with your Finger. In Women or Grown Maids, you must put the finger up the *Vagina*, but in young Girls into the *Anus*.

But since hard Swelling and Schirrosities may impose on you in this way of Examen, the *Catheter* is to be relied on as the most certain evidence.

The first way of Searching.

Let the Patient sit in a Chair with a Back, on which he may rest or lie on his Back. Take the Yard by the *Glans* between the Thumb and forefinger, drawing it up straight, compress the *Glans* a little to open the *Urethra*, into which introduce the *Catheter* with its Concave side downwards; when this is past in far enough for you to judge it is in the Neck of the Bladder, turn it quick and dextrously, and bring your hand over the Patients Belly, and at the same time that you turn it, draw the Yard a little forward to keep the *Urethra* streight and without wrinkles, which may hinder the entring of your Instrument.

If after turning the *Catheter* you find it did not enter, leave the Yard, and introduce your finger into the *Anus*, to guide the end of it into the Bladder. After this draw your finger out of the *Anus*, and quit the Yard to strike with the Instrument, turning it every way to hear what noise it makes on the Stone. If it happens that the Stone swims in Urine, (for the Bladder must be full when you pass the Instrument,) and you have reason to think this may hinder you from perceiving it, evacuate the Bladder by drawing out the Silver Wire in the *Catheter*, and after try as before.

Second way of Searching.

The following way seems more convenient, because there is no need of turning the *Catheter*. Let the Patient lie on his Back, and holding the *Glans* between your forefinger and Thumb, raise the Yard up, inclining it a little on his Belly, hold the Rings of the Instrument on one side of the Belly, and compress

compreſs a little the *Glans* between your fingers to open the *Urethra*; then introduce the end of the *Catheter*, continuing to push it on gently, till it enters the *Bladder*. By proceeding this way, you ſave the trouble of paſſing your Hand over the Patients Belly, and turning the Inſtrument.

The way of Searching Women.

To Search a Woman oblige her to lie on her Back, with her Buttocks a little raiſed, and her Thighs divaricated; then ſeparate the *Nymphae* with the left Hand and with the right; introduce the Inſtrument into the neck of the *Bladder*, as in Men. When you are well aſſured there is a Stone, prepare the Patient for the Operation by General Remedies, Bleeding, Clyſters, and other proper Medicines, to prevent any ill Habit of Body, having a bad influence on the Wound after the Operation.

THE OPERATION.

Place the Patient on a Table of a middle height, with his Back ſupported on the back of a lin'd Chair, his Thighs open, his Knees drawn up to his Belly, his Heels applyed to his Buttocks, and his Hands reſting on each ſide his Ancles. To keep him in this Poſture, take a great Swathe three Inches broad, the middle of which is to be put about his Neck, and with each end of it the Arms are to be faſtned to the Thigh and Leg of the ſame ſide, each hand reſting on the out ſide of the Ankle of the Foot. This Poſture is exceeding convenient to hinder his ſtirring, to keep the *Bladder* ſteddy, and give liberty to the Muſcles of the lower Belly to perform their Actions. After this place a Servant on the Table behind the Patient, to keep him down by preſſing on his Shoulders, in caſe he ſhould attempt to riſe. All things thus prepared introduce a *Catheter* (not like the former, but with a Hollowneſs or Furrow along the convex ſide) into the *Bladder*, after the manner before deſcribed. The *Catheter* thus introduced, muſt be held by a Servant placed for that purpoſe on one ſide of the Patient, who muſt hold it with both his Hands, drawing up the *Scrotum* in ſuch a manner, that the back of the *Catheter* which thruſts out the *Perinaeum*, may be between his two forefingers, and leave ſpace enough for you to make your Inciſion. The Inciſion muſt be made with a ſharp two edged Knife on one ſide the Suture of the *Perinaeum*; which muſt be greater

greater or less, as you judge the Stone to be. To perform this dexterously, hold your Knife like a Lancet, and entering in the most prominent part, plunge it quite to the *Catheter*, continuing to pass and repass it in the furrow of that Instrument, till you have laid as much bare as you desire. This caution is necessary, lest if the Incision were made at several times, there might be more than one Orifice.

In Men the Incision must be near two Inches and an half long, in Children less. It is better to have it too great, than to be obliged to enlarge the wound with the Dilator, in case the Stone should prove too great to be extracted thro' the aperture, because such violent distention tears and bruises the Fibres of the Bladder. The Incision if it be well made must enter the *Urethra*, and you must not draw the *Catheter* out of the Bladder, till you have slid into its Furrow a Gorget or two Conductors, on which the *Forceps* is after introduced; for without the direction of these, you may easily mistake and pass them aside, which too often happens; and whilst the Operator thinks he is in it, and seeking the Stone feels it with his *Forceps*, instead of that pulls the Bladder and often tears it. When the *Forceps* is in the Bladder, open it, and gently search for the Stone, which when found hold fast. You must never close your *Forceps* in the Bladder, except when you have hold of the Stone, for fear of tearing its Membranes. When you would take hold of the Stone, open the *Forceps* with both Hands, and you may be assured you have hold of it, if its two Bows stand wide open.

If the Stone be Oval, and you have hold of it lengthways, loose the Stone, and introduce your *Forceps* a second time, and take hold of it another way. But observe here the wideness of the Bows alone is not a sufficient evidence to assure you that you hold the Stone lengthways, since the same appearance will be, if the Stone be large; wherefore to obtain a more full information of this matter, enquire of the Patient how long he has been afflicted with this Distemper, (for the older the Stone is, the thicker it grows) or if he feels a great weight in his Bladder. You may farther judge of the thickness of the Stone, and perhaps of its Figure too, by introducing the Finger into the *Anus*, and feeling it through the Gut. When you have hold of the Stone with your *Forceps*, do not draw it directly out, but turn your Fist to the Right and to the Left.

If the Stone happen to adhere to the Bladder, you must
not

not obstinately resolve to extract it, lest you tear the Membranes, but if it be fixed to the Neck of the Bladder, it will be freed without Suppuration. You may conclude that it is fixed to the Bladder; if not, being very big, it comes forth with Difficulty, and then you must proceed gently in extracting it.

If Stones are excessively large, as some noted in our Remarks, forbear extracting them, lest the Patient expire in your Hands. If you perceive the Stone is broken in extracting it, put in the *Forceps* again, and draw out the fragments in the same manner as the whole, and bring out the clotted blood with the Spoon. If the Patient be very weak, remove him to his Bed, and put a Tent into the Wound to prevent it from closing, and draw out the Remaining fragments after he has recruited his Strength.

If the Stone be so big that it cannot pass through the Orifice, dilate the Wound.

This Operation is called the Greater *Apparatus*, or Cutting on the Staff.

The Lesser Apparatus in Men, or Cutting on the Gripe.

This manner of Operation is called lesser, because it do's not require so many Instruments as the former. To perform this, put your forefinger into the *Anus*, to bring the Stone to the *Perinaeum*; make your Incision on the Stone it self on one side of the Suture, and extract it through the aperture with a Hook. This Operation takes place when the Stone is not too big, and you can bring it to the *Perinaeum* with your Finger.

The Way of Cutting Women.

Put your forefinger and middle finger up the *Vagina*, or into the *Anus* in young Girls; with these two fingers bring the Stone to you, compressing the bottom of the Belly with the other to make it descend: Put a hollow'd Probe or Director up the *Urethra*, which is to be held by some Assistant; then slide a Dilator on its Furrow, and taking out the Director, Dilate the *Urethra* without cutting at all, and so extract the Stone with the Hook or *Forceps*. You must not put the Dilator too far up the *Urethra*, because the Neck of the Bladder is short in Women, and by this means you may happen to lacerate the *Sphincter*, and so cause an involuntary efflux of Urine. This is called the lesser *Apparatus* in Women.

The Greater Apparatus in Women.

The Patient being put into, and kept in the same posture with (Men described before) Introduce the Conductors into the *Urethra*, and between them slide a Dilator, then withdraw the Conductors and so dilate; next introduce the *Forceps*, and drawing forth the Dilator, take hold of the Stone with it. If the Stone be too big to come forth, make a small Incision to the Right and to the Left, to make way for it. Instead of the *Conductors*, you may use the Gorger, if you like it better.

The *Urethra* in Women dilates exceedingly, and it seldom happens that we are obliged to have recourse to Incision. Besides, Women are more rarely attacked with this Distemper than Men; because their *Urethra* is Wider, Streighter and Shorter, and the Urine more easily drives away that Sand which is lodged in the Bladder.

The Success of the Operation may be guessed at from the quiet repose which the Patient enjoys, the Freedom of Breathing, the Moisture of the Tongue, no Immoderate Drowth, Pain scarce sensible, little or no Fever, no Swelling in the Hypogastrick Region, and a Cessation of Inflammation on the fifth or sixth Day.

Sometimes a Stone is voided out of the Bladder, and passes into the *Urethra*, where it lodges and obstructs the Emission of the Urine. In this case if the Stone be near the *Glans*, press that with your Finger, and if it do not easily come forth, bring it out with the Extractor; if both fail, make an Incision on the side of the *Urethra* to so take it out.

When the Stone is in the Neck of the Bladder, push it with the *Catheter*, or endeavour to bring it back by slipping the Finger into the *Anus*.

When the Stone is in the *Urethra*, if it be small, stop the passage with your Fingers (compressing the Yard beyond the Stone) then blow into the *Urethra* to dilate it, and push the Stone forwards with your Fingers, till you have brought it forth. This way succeeds better in young Children, than in Adults, their *Urethra* being more easily distended.

The Stone may sometimes be drawn out by Suction: this succeeded well with Dr. *Muys*, who advised the Mother to suck the Yard of her Infant.

If a Stone be lodged in the *Urethra*, and cannot be got out by any of the ways above mentioned, draw the Skin
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of the Prepuce upwards, and take the Yard between your fingers to hold the Stone firm, compressing it a little, and making the Incision on the Stone lengthways on the side of the Yard. When the Stone lies bare, press it out with your forefingers, or pick it out with the Extractor.

THE DRESSING. When the Patient is Cut, apply a great Compress on the Wound, and let some Robust Fellow carry him to his Bed. If there be any fragments of the Stone remaining in the Bladder, or you have ground to think there are more Stones; put a Tent dipt in some Digestives into the Wound to prevent it from closing, and if there be a Flux of Blood, stop it with Restringtons. If there be no Stone or Gravel remaining in the Bladder, put no Tent into the Wound, but a Pledgit with some good Balsam, with an Emplaster over that, and a Compress both in the form of a Horse-shoe. The Dressing must be kept on with a Roller with four Tails or the double T suspended with a Collar, and the Leggs below the Knee, bound together with a narrow Roller, to keep the Wound from gaping.

The Roller with four Tails is made with a piece of Linnen Cloth three inches broad, and an Ell long; slit this lengthways at both ends to the middle, leaving between four and five inches in the middle undivided. Apply the plain or entire part on the Wound, and then cross the two foremost Tails, and fasten them to the Collar about the Ribs. (This Collar is a Band stitched at both ends, which is put about the Patients Neck, and hangs down to his Belly.) Then pass the two other Tails through the Collar, and bringing them back fasten them behind.

The π or double T, is a Girth which goes round the Waist, with two Straps in the midst sown at some small distance from each other; apply the middle of the Girth behind, and tie its ends before, then bring the two Straps between the Leggs, crossing them on the Wound, and tie them before to the Girth or Waistband.

The Dressing for the Incision made on the Yard.

Apply a Pledgit dipt in some good Balsam, and over it an Emplaster. The Bandage and all the rest, is the same as in the *Phymosis*.

THE CURE. We have observed before, that in case there be reason to suspect there is Gravel remaining in the Bladder, you must not instantly heal the Wound, but put a large Tent into it with some good Digestive, to give leave

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to the Gravel to purge it self through the Orifice. If the Wound be contus'd, you must Suppurate till a laudable Digestion appear, every day lessening the Tent. But if after the Operation there be no Contusion, it suffices to put in a Pledgit arm'd with some good Balsam, and Dress it twice every day, till it be perfectly cured. The Patient must be fed with good Broths and Gellies, and must not eat any thing Solid for fear of a Fever, which would obstruct the Coalition of the Wound.

To prevent the Stone from being reproduced in the Bladder, the following Precautions must be used. The Person who is cut must lead a Regular Life; that is, He must not eat to Excess, for fear of creating ill Juices, the Stomach not being capable of good Digestion, when it is over-charged with Meat. He must eat Wheaten Bread well baked, for Rye Bread containing an Acidity, is apt to Coagulate the Humours, and produce the Stone. He must avoid all salt Meats, all sorts of Ragoufts which ordinarily are high Season'd: All these Aliments heat, and are apt to petresce that Glairy Matter, which is lodged in the Kidneys and Bladder. Milk Meats, Old Cheese, Hard Eggs, Sallets, Unripe Fruits, create ill Humours, which being mixed with Acids, acquire a coagulating property. The Use of Heady Wines and Beer, is dangerous. *Gesner* has observed, that if you put Sand into Stale Beer, it forms a Stone. Muddy Waters, and Waters of melted Snow and Ice are very impure, and full of Bodies, which have a Coagulating property. Excessive Application of Mind, Debauches of Wine and Women, all violent Passions are very hurtful to Persons who have any Disposition to Gravel; all Excesses in any of these kinds sharpen the Blood, and waste its Unctuous and Balsamick part. Too long Repose is hurtful, because the gross Feculent Matter subsiding, and not being dispersed by Motion is collected together, and soon coagulated by an Acid.

For these Reasons the Patients Diet must consist of such Things as are sweet and easie of Digestion, as Veal, Lamb, Fowl, &c. or Broths, in which the Cooling Plants are boyled, as *Succory*, *Sorrel*, *Parsly*, *Spinage*, or others of the like Nature.

White-wine boyled with a Moiety of Water, &c. Sleeping and Waking must be moderate. The Patient must not sleep on his Back, for this posture is Heating. The Body must be kept open with Clysters, if Nature does not act her part,

and gentle Purg'es given at proper times, of *Whey*, *Manna* and *Cassia*.

Those who are subject to Nephritick Colicks, may be cured by Emollient and Lenitive Clysters made with *Mallows*, *Marsh-mallows*, *Milk*, *Sugar*, and *Oil of sweet Almonds*. These are Preparative to Diureticks, such as Pisans made with *Salt-Peter* refined ʒ℥. Dissolved in a Decoction of *Rest Harrow*, and *Dogs Grass*. There is not a more excellent Diuretick than *Turpentine*, ʒ℥. made into a Pill. To harden it, it must be boiled in some Diuretick Liquor, as Turnep Water, and so made up. To the part affected, apply Fomentations. R. *Roots of Marsh-mallows*, ʒ℥. *Mallows*, *Melilot*, *Chervil* and *Camomil* together three Handfulls, *Linseed*, *Parsley Seed*, ā ʒi. Boil the Ingredients together, and apply the Cataplasim to the Part.

Baths made with Emollient Herbs, are very useful in Nephritick Pains, and Broth with *Oil of sweet Almonds*, ʒi. given to the Patient in the Bath. You may likewise give *Turpentine Pills*, or a Dram of the Powder of *Millepedes*, both which are proper to expel Gravel by Urine.

If in Nephritick cases the Patient Vomits, give him the following Powder. R. *Sperma Ceti*, *Crabs Eyes*, ʒ℥. *Cinabar of Antimony*, ʒi. *Volatil Salt of Amber* iv. gr. *Laudanum* gr. i℥. *Torchisc.* *Alkekengi* with *Opium* ʒ℥. Mix these for four Doses.

Mr. Boyl in Nephritick Pains, commends *Castile Soap* dissolved in old Oyl of *Wallnuts*, adding Oyl of *Ginger* three or four drops. This is a good Diuretick.

R E M A R K S.

There is in the Hospital of *the Charity at Paris*, a Stone weighing 51 Ounces, taken out of the Bladder of a Priest after he was dead, who had been Cut to no purpose, the Stone being too large to be extracted.

There was found in the Bladder of a Certain *English Knight*, who dyed at 82 Years of Age, a Stone which weighed 25 Ounces and a half, the Urine had formed a Channel in it, through which it passed into the *Urethra*. This Channel had one Hole in the place where the *Ureters* enter the Bladder, and another at the Bottom of the Stone.

Hildanus Centur. 1. Obs. 69. relates the History of a Young Fellow, who had emitted by the Yard 300 Stones of different Colours, some as big as Nuts, others as large as Chest-
nuts

nuts. He voided all these in two Years time with great Pain, accompanied with Blood; This young Man dyed of the Plague.

The same Author relates, *Cent. 4. Obs. 50.* He had found the Bladder of a Man divided into two Bags, each Bag containing six Stones about the bigness of Galls.

In *Centur. 4. Obs. 5.* He mentions a Stone which he had taken out of the Bladder of a young Man of 20 Years of Age; which weighed 22 Ounces. It seemed to consist of several small Stones cohering, and had the Figure of a Cupping-glass. The Patient dyed in the Hands of the Operator.

In *Centur. 6. Obs. 57.* He tells us he had a Stone by him, which he had extracted out of the *Scrotum*, which weighed 8 Drams when it was first taken out, but at present weighs no more than five.

In the *Miscellanea Curiosa, Obs. 44.* There is a History of a Man of 64 Years of Age, tormented with a violent Pain in the *Ischium*; He had an *Asthma* to that degree, he could not breath except he kept his Head erect, had the Jaundice besides, and in fine dyed of these Distempers. Upon opening the Body, two Tubercles were found in the Lungs, and 72 Stones about the bigness of Peas, of a blackish, yellow Colour in the Gall-Bladder and *Porus Choledochus*. In the Gall-Bladder of a certain Count of 70 Years of Age were found several Stones, the greatest of which weighed 14 Drams, and the least 4. In a Woman of 63 Years of Age, the Gall-Bladder was filled with several greenish Flints, larger than Beans.

Five Stones, the least of which was as big as a Nut, were taken out of the Gall-Bladder of Pope Urban the VIII. *Borrichius* tells us, he had found in the Bladder of a Woman, above seventy Stones of an irregular Figure, soft to the touch, which melted in warm Water. *Helmont* relates, that he had found Stones in the Gall-Bladder of several Animals; *Bartholin. Cent. 1. Hist. 34.* tells us that a certain Person very much subject to Gravel, falling into a prodigious Swear, evacuated a great quantity of small Sand that way.

In the *Miscellanea Curiosa, Obs. 46.* Is an account published, of a certain Ox seeming to be more stupid than any of the Rest, inclining his Head to the Ground, often lying down, and nodding in a Paralytick Manner, who being observed to wast away, was killed by his owner. The Brain was found petrified, and as hard as Marble, all the remaining Part of his Body being sound. The Leannels

A Compleat Body

and Decay in this Animal, did doubtless proceed from a Defect in the Distribution of the Spirits from the Brain, to the several parts of the Body.

Obs. 27. Contains the History of a Woman, who for several Years being tormented with cruel Nephritick pains, made Urine so thick that it Roped, and sometimes felt such an extreme chillness, that standing before a Violent Fire naked, she could not perceive the least Heat, though her Skin were scorched. This Woman dyed with excessive Pain, and her Kidneys were found petresied, and as solid as Alabaster.

Obs. 65. A certain Person of 72 Years of Age, of a Phlegmatick Habit of Body, was attacked with a suffocative Catarrh, and a great Suppression of Urine: A large Aperture was made in the Vein of the Arm, out of which six Ounces of Blood were drawn, together with which came out 4 small Stones, which made so great a noise in falling into the Porringer, as to be heard by the standers by, these were of a yellow Colour, a little inclining to Red, and of the same bigness with the Gravel usually voided in Urine. The Patient was soon cured of his Catarrh; but the Difficulty of Urine remained, and soon after he dyed of an Apoplexy.

Obs. 66. Relates the History of a Woman of 33 Years of Age, of a Sanguine Complexion, who being near the time of her Delivery was suffocated with a Catarrh. In the inferior part of the Liver was found a great Abscess or Mass of Matter contained in a *Cystis*, so hard and strong, that it could not without great Difficulty be cut with a good Pair of Scissars. This was filled with a Black reddish Substance, very Glutinous, nor unlike Birdlime. This Glew was so Tenacious, it was difficult to get it off from the Fingers. In the midst of this was lodged a Stone, about the bigness of a Pullets Egg, which being divided in the midst, sparkled as if it had been filled with Nitre. This Stone was much harder on the Surface than within, and void of all perceptible Scent.

Obs. 107. Relates that a Widow of a certain Shoo-maker, had for the space of 16 Years, a Stone in the left Kidney, who by the Torment which she suffered, was wasted to that degree, she seemed a living Skeleton. She had a great *Stupor* on her left Thigh. This Woman took every day for some time, a *Decoction of Speedwell* in great quantity. This innocent Remedy brought the Stone from the Kidneys into the Ureters; whilst it was detained there, she found the Pain intolerable, and expected nothing less than to be killed by

by it. She continued the Use of her Medical Drink in greater quantity, and so brought it down into the Bladder, and thence by the help of the same Drink and Fomentations, at length brought it quite forth.

C H A P. XIV.

Of the Punction of the Perinæum.

THIS Operation is an *Aperture made in the Perinæum, to let out the suppress'd Urine.*

THE CAUSE. The Suppression proceeds from some great Inflammation, or some Carnosity, Fungus, Schirrus, or Ulcer, which blocks up the *Urethra*.

THE SIGNS. There is great Pain and Inflammation in the *Perinæum*, the Urine is retained, and the *Catheter* will not pass the Duct to let it out.

The Operation must only be undertaken when milder ways fail, such as Injections, the *Catheter*, or Cataplasms. In this case put the Patient into the same posture as in Cutting for the Stone, and without using the *Catheter*, (for we suppose that will not enter into the Bladder.) Make an Aperture with a Lancet or an Incision Knife, large enough to put in a *Cannula*, whose extremity may pass into the Bladder. This must be left in the Wound for the Urine to pass through, till the Inflammation be over. After the *Cannula* is drawn out, dress the Wound.

THE DRESSING. This is exactly the same with that described in Cutting for the Stone.

THE CURE of the Inflammation of the *Perinæum*, consists like others of the like kind in applying Discutients to the Part, taking Internally Volatil Medicines, v. g. *R. Carduus Water*, ʒi. *Water of Elder Flowers*, ʒij. *Crabs Eyes*, ʒi. *Diaphoretick Antimony*, ʒss. *Sperma Ceti*, ʒi. *Laudanum* gr. i. r. *Sugar-candy*, ʒij. of which Mixture the Patient at several times must take some Spoonfulls.

Cataplasms are made of Roots of *Asparagus*, *Bryony*, *Hemlock*, *Flowers of Chamomil* and *Elder*, with *Camphire* and *Sulphur*. Compresses dipt in *Spirit of Wine Camphorated*, may be applied. If these prove ineffectual, suppurate the Wound with emollient Cataplasms made with *Lily Roots*,

Bryony, Marsh-mallows, Brank-ursin, Pellitory, Chervil, Mullin, Chamomil, Melilot, Figgs, &c. After the Ingredients are boiled, pound them in a Mortar, adding *Oyl of Lilies* or *Roses*, and apply the Cataplasm hot to the Part.

When the Suppuration is over, cleanse the Ulcer with some deterging Balsam. Sweeten the Blood with Volatil Medicines given internally, such as *Diaphoretick Antimony, Crabs Eyes, Volatil Salt of Hartshorn* and *Vipers*, and an infinity of others to be found in *M. L' Emery*, or other good Chymists. These Volatils may be given together or separately in some proper Vehicle, as *Carduus Water*, v. g. of the powder ʒiſs. in a Glas of the aforesaid Water.

If the Ulcer be in the *Urethra*, which may be discovered by the Suppuration, make your Injections of Mundifying Ingredients infused in Hot Wine.

R E M A R K S.

In the Chamber of *the Blessed Queen* in the *Hotel Dieu*, there was a Big-bellyed Woman ill of the Small Pox, her Fundament was rotted from the *Os Pubis*, to the *Os Sacrum*, notwithstanding which, she was Delivered of a living Child, who dyed some Hours after, as did the Mother not long after her Delivery.

Bartholin Cent. 2. Hist. 52. tells us that a Man of 49 Years of Age, had a Suppression of Urine caused by Straining in Mounting his Horse, a Feaver ensued with a continual Hicough, a Pain and Swelling in the Groin. Upon insinuating a Pipe into the Bladder he Urined, the Swelling of the Belly sunk, and the Pain was allayed; but the Pain sometime after returning, the Patient dyed. Upon opening the Body, there appeared two Tubercles of the bigness and figure of the Testicles, which perfectly stoppt the Duct of the *Urethra*. These in all points performed the Office of a Valve, opening from without inwards, if the *Cannula* were thrust against them, but stoppt the passage from within outwards. These Tubercles consisted of a firm white Flesh, without any Purulent Matter; The Right was larger and something more brown than the Left. The lower part of the Bladder was a little Mortified, the Patient made a Purulent Water, and the *Colon* adhered strictly to the *Peritonæum* on the right side.

C H A P. XV.

Of the Fistula in Ano.

THIS Operation is an Incision made into the Anus, to lay open an Ulcer in that part.

THE CAUSE. A Fistula is a Callous, Sinuous, Deep Ulcer with a streight Mouth or Entry, opening into a more Spacious Bottom. These Cavernous Ulcers full of Partitions, are formed by the sharp and saline parts of the Blood.

The immediate Causes of *Fistula's* in this part, are *External* and *Internal*. The *External* are Contusions, Impure Embraces, Falls, Leeches ill applyed, &c. all which obstruct the Circulation, detain the Humours, and create an Abscess, apt to degenerate and become *Fistulous*. The *Internal* Causes are Abscesses proceeding from Obstructions, Inflammations, Ulcers, Piles, &c. The *Anus* is more subject to *Fistula's*, than any other part in the whole Body. This proceeds from the great quantity of Fat, with which the *Intestinum Rectum* is loaded, from the Evacuation of the *Faces* here (this being the common Sink, where all the Filth of the Body is brought down to be carryed off) from its continual Humidity, and numerous Vessels, (as Branches of the Hypogastrick Arteries and Veins, a Branch of the *Aorta*, another of the inferior Mesenterick Artery, the Hæmorrhoidal Veins, the vast number of Lymphaticks;) and Lastly, from its Glands which separate a white, glairy, viscous Liquor. Some or more of the Causes above mentioned, hapning to meet with a part thus disposed, it is no wonder to find a *Fistula* soon formed.

Fistula's differ much, and are to be distinguished by the following Marks.

THE SIGNS. If the *Fistula* be in the Flethy parts, the Pus is White, Turbid and Viscous. If in the Nervous parts, the Patient has Acute and very Sensible Pains, and the Humour is Serous and Sharp. If it attack the Veins and Arteries, it works through them by its Acrimony, and the Matter which comes away, resembles the Washings of Flesh. If the *Fistula* emit a thin, clear, sharp, Humour, it is a mark it has invaded the Bones, and they are corrupted. In this last Case the Callosity is greater, which proceeds from the Excessive Acrimony and Saline parts, able to Corrode and Ca-

riate

riate so solid a substance. How the Saline parts form a Callosity, may be conceived by the like effect which Salt has, when strewed upon Pork which it hardens, whilst the Humidity of the Flesh dissolving it, its parts like so many stakes enter and hinder the Motion. This explication is plausible enough, and may be admitted by those who place the Hardness of Bodies in the Repose of their Parts.

Recent *Fistula's* in Persons of a good Habit of Body, are curable if the part concern'd will admit the Application of proper Remedies. But when Inveterate or in ill Bodies, or invading parts necessary to support Life, as the Bladder, Guts, &c. where no Application can be made, are desperate,

Fistula's are of different sorts; some pierce the Gut without any outward Orifice. Others open outwardly, without entering the *Intestinum Rectum*. These two Species are termed *Incompleat*. Some open within and without the Body, and these are called *Compleat*. There are some which have divers Cancers, all opening into one Cavity.

If the *Fistula* pierces the Gut only, there is a small Tumour and Inflammation Visible, without the *Pus* flows out of the Gut, there is Pain, Excoriation, Itching, and a *Tenesmus* caused by the Acrimony of the Matter, which irritates the Part, and sollicitates the Patient to go to Stool without any necessity. If it open outwardly, the Orifice is discerned by the Eye, and the Probe. No *Pus* comes from the Gut, and none of the preceding Signs appear. The Sinuosities and Caverns are found by the Probe, by the Pain and Matter of various Colour and Condition. From considering the Signs, we proceed to

THE OPERATION.

The Operation is the same, of whatever Nature the *Fistula* be. Place the Patient on the brink of his Bed with his Thighs stradling; If the *Fistula* open outwardly, enlarge the Orifice to introduce the Incision-Knife with its Probe. This Knife must be crooked and slender, and the Probe Long, Pointed at the end, and made of well temper'd Metal, to prevent the Danger of its breaking in the Operation. Put the forefinger of the Left Hand up the *Anus*, introduce the Knife into the External Orifice of the *Fistula*, and when you feel the Point of the Probe on your Finger, perforate the Gut with it, and then draw one end of the Probe with your Finger, and the other with your Hand, so make the Incision quite through at one Slash. Observe before

fore you use this Instrument, to have its Edge cover'd with a fine thin Silver Chape or Sheath, which keeps it from hurting the Patient when it is thrust in, and is to be taken off when the Knife is in the Wound, before the Incision be made.

If the *Fistula* pierce the Gut only, and the Swelling, Pain, Inflammation, or other External Marks of the Bottom of the *Fistula*, are very remote from the *Anus*, forbear the Use of the Knife, which would make the Wound too large and painful, and make the Aperture with potential Cauteries only.

For this purpose lay an Emplaster over the Bottom of the *Fistula* of the same length with the Orifice design'd, apply the Caustick bruised on the part, first wetting a little the Place, then cover it with another Emplaster to keep it on the part. The lower perforated Emplaster, prevents the Caustick from acting on the adjacent parts, or spreading farther than you design. The time of its lying on, must be proportioned to its Strength. After which the Escar is to be separated with the Lancer, and the Operation performed after the manner above described. When the Operation is over, search with your forefinger whether there be any Sinus's, which if you find, open with the Scissars, and cut the Communications; without which caution the Wound apparently cured, will infallibly relapse. Here you must be careful of cutting Arteries which may lie in the way; in case of such accident, stop the Blood with *Lemeries*, Stryptick Water, or some good Restringent Powders, of which you may find an infinity in Authors.

If any Surgeon in the Country shall be called to perform this Operation, unprovided with the Instrument described, he may use his Scissars in this manner. Let him take an Iron Wire sharpened at the end, and pass its point through the enlarged Orifice, and thrust it into the Gut, having introduced his Forefinger into the *Anus*. Then let him draw the point outwards through the *Anus*, and when it is come far enough out, bring the Ends of the Wire together, and with the left Hand drawing the Flesh to him, enter one Blade of the Scissars or the crooked Knife, and at once cut through all the Flesh. This method is useful in defect of other Conveniences, or in case the *Fistula* lie so deep in the *Rectum*, you cannot without difficulty introduce the Knife together with its Probe. In this Operation, you must be careful to avoid cutting the Sphincter quite through, lest the Patient ever after
suffer

suffer an involuntary emission of the Excrement.

THE DRESSING. Fill the Wound with Dossils arm'd with good Digestives, and so dispos'd, that the Medicines may have their effects equally on all its Parts, over these lay Pledgits with more Digestives, and after the Cavity is filled, cover all with an Emplaster, and over this lay a Triangular Compress, which must be of this Figure, that one side may pass between the two Buttocks. The Dressings must be kept on by the Roller with four Tails fastned to the Collar, or with the single or double T. These are the very same with those used in the Operation of Cutting for the Stone, where the Reader will find them described, which we shall omit here to avoid unnecessary Repetition.

THE CURE. Good Digestives must be apply'd twice a Day, to remove all Callosities. If these fail of effecting, lay a Caustick on the Indurations, and when the Digestives are laudable, mundifie the Ulcer after the usual manner.

Fabricius Hildanus, Cent. 3. Obs. 80. Relates a Cure of a *Fistula* arising from the ill managing a Tumour of the Parotid Gland. A certain Person had an Abscess under the right Ear, which by degrees degenerated into a *Fistula*, which had been three Years unsuccessfully in the Hands of some Barbers, till he was called to it. He found it Cavernous with two *Sinus's* at the least under the skin; the first of these extended upwards towards the *Cranium*, dividing again into two other; the second went downwards in its descent, following the Course of the Jugular Vein, all these Cavities were lined with a *Callus*. In the first place he prescribed the Patient an Exact order of Living, purg'd him twice, consumed the skin which covered the *Fistula* with a Caustick, hastning the Separation of the Escar with *Basilicon*. The Callosities in the Bottom he likewise consumed with another Caustick, with the Addition of his *Angelick Powder*. After these remov'd, he proceeded to Mundifie the Wound with the same Powder, which he Extolls for its wonderful Efficacy in consuming superfluous Flesh, advancing the growth of the sound, and procuring the Coalition of Wounds.

REMARKS.

M. A. Severinus in his Book *de Chirurgia Efficaci*, p.2.c.49. Relates the History of a *Fistula* in the *Perinaeum* of five Years standing. And mentions another in the *Penis* with four tortuous

tinuous Sinus's, in which every Year a New Abscess was formed, creating great Pain and Difficulty of Urine.

C H A P. XVI.

Of the Operation of the Empyema.

THIS Operation is an *Aperture made between the Ribs, to let out the Blood or Matter lodg'd in the Cavity of the Breast.* The word *Empyema* is sometimes taken for a Collection of Matter it self, and sometimes for the Operation made to emit it.

THE CAUSE. This Collection whatever the Matter be, sometimes Stagnates between the *Pleura* and the Lungs, and sometimes in the substance of the Lungs themselves.

The Causes are *Internal* or *External*. The *Internal* sometimes is an Abscess formed in the Duplicature of the *Pleura* or the Lungs, which coming to break, makes an Effusion of Matter on the Diaphragm. The *External* Cause is frequently some Fall or the like Accident, which breaking the Vessels spills a great quantity of Blood, and forms an Abscess. Sometimes the Lungs adhere so firmly to the *Pleura*, that the *Pus* do's not load the Diaphragm, in this Case there is no necessity to disengage them, which can scarce be done without Laceration, since Life is not immediately concerned. These generally proceed from some preceding Pleurisie or Abscess in the Lungs.

The sense of Authors about the Causes of a Pleurisie differ very much; some pretend it is caused by an Ebullition of the Blood in the *Pleura*. Some think it is a Bilious Blood lodged in the Duplicature of that Membrane, which being stop't in its Course, putrefies and causes this Distemper. Others derive it from an Effusion of Blood out of the Intercoastal Vessels, which being lodged in the Interstices of the *Pleura*, suppurates and is converted into *Pus*.

The most common occasion of Pleurisies, is the inconsiderate practice of some Persons, who after violent Heats or Exercise, expose themselves to a sudden Change, by drinking Liquors cool'd with Ice, going into some Cellar or Vault, or other Subterraneous place, or perhaps opening their Bosom.

While

While the Body is heated the Pores are open, the Blood is in a great Agitation, which coming to dissolve, and the serous Part to separate from the Globular, consequently there follows a profuse Sweating, and every Pore is filled with Moisture, till the Chillness of the Ambient Air, a Draught of Cold Drink, or some other External Accident in a Moment stops the Evacuation, and the Matter ready to transpire, is arrested between the Duplicature of the *Pleura*, where it Stagnates, Corrupts, and by its Acidity, coagulates the Blood. Those who indiscreetly keep their Breasts open, before the Weather is very warm, are in danger of being attacked with Pleurifies, for the sharp Air soon piercing the Breast, which is a Thin part and not very Fleishy, creates Obstructions, and the Blood meeting with these impediments, which hinder the free Circulation and Passage from the Arteries to the Veins, its Serosity Transudes thro' the Arterial Coats, and the Blood and *Lympha* together Stagnating in the *Pleura*, putrefie and form a Suppuration.

Though Cold be the most frequent and general Cause of these Distempers; yet it is not always so, and we often find Men without overheating their Bodies, or using the least violent Exercise, surprized with Pleurifies. In this Case I conceive, they arise from some Nitrous or Acid Particles conveyed into the Body with the Aliment, or the Air in Respiration, which coagulate the Blood, and intercept its Motion. This Opinion is confirmed by an Observation, That Pleurifies are very common after Earthquakes, Tremblings or other Agitations of the Ground, which throw up the Nitre, and infect the Air, and this doubtless is the Cause, why Epidemical Pleurifies rage so much in Hot Countries, which more abound with Nitrous Salts, than colder Climates.

The same Causes which produce *Pus* in the *Pleura*, are likewise capable of producing an Abscess in the Lungs.

THE SIGNS which discover Blood or *Pus* lodged within the *Pleura*, are Inflammation, Acute Pain, or Weight, a small continual Fever, a Hard, Close, Deep Pulse, frequent Rigors, a great Difficulty of Breathing, a Dry Cough, and an universal Disorder of the Body: The Patient cannot lie on the sound side, (because the Matter contained in the *Pleura* draws it down,) grows suddenly Lean, and Waists very much in a little time.

If the Abscess in the *Pleura* break, and the Matter be discharged on the Diaphragm, all these Symptoms vanish, and the Patient enjoys some ease for the present; but soon after He finds a difficulty of Breathing, a Weight on the Diaphragm, a Fluctuation, and Great Disturbance: The Fever increases and becomes burning, the Pulse rises, and the Pain (which is not so acute as before) is felt under the short Ribs: He cannot lie on the sound side, because the *Mediastinum* in that posture is loaded with the *Pus*, which oppresses it, and causes great Pain: Sometimes the Spittle becomes Purulent, and Abscesses in the Liver ensue, in the same manner as after great Wounds of the Head. If the *Pus* be lodg'd on both sides, the Patient cannot lie on either, but is forced to lie on his Back.

If there be *Pus* in the Substance of the Lungs, the Patient breaths with great Difficulty, finds a great Weight from the Compression of the Matter, and a fixt Pain, (which last is usual in Pleurifies, as well as in this Case; but with this difference, that Pleuritick pains are sharp and sudden, and these not so vehement, and come gradually) the Fever is continual without any Remission, and the Thirst immoderate, the Spittle purulent, the Patients Mouth and Throat are dry, his Cheeks of a Florid Red colour, his Eyes sunk in their Orbeit, their lively Sparkling quite extinguished, his Nails reflected back, and his whole Body dry and emaciated.

If the Fever encrease, and the Patient grows delirious, If his Spittle is black, livid, or of the colour of dried Leaves, the Symptoms are Mortal.

If the Abscess originally proceed from an Internal Cause, the Difficulty of Breathing is not so great. The Fever is continual accompanied with frequent Rigors and Cold Sweats, from time to time: At first the Patient spits Blood, but afterwards a spumous Purulent Matter sometimes Yellow, (which last is a presage of Death) He is forced to lie on his Back, by reason of the Pressure of the Matter, if he should lie on the sound side; and when he turns to lie on it, the Lungs press on the *Pleura*, which unavoidably causes Pain: The Eyes sparkle at the first, but after some time lose their Vivacity, and the Face is bloated.

There is no more certain sign that any Wound pierces the Breast, than the noise which the Air makes in rushing out, and the Motion it gives the Flame of a Candle, applied to it.

To search the Wound, the Patient must be put in the same posture he was in at the Time he received it; for the better introducing the Probe, and giving exit to the Matter. If the Wound penetrate the Lungs, the Blood is Frothy, and the noise of the Air is not so discernible, as in simple Wounds. The Probe piercing into the Breast, and the exit of the Air are undoubted Signs, there is a penetration of the Breast, but not that the Lungs are wounded, since the Air may rush out though these are entire; and therefore you must enquire for something farther, on which you may safely rely. If a Wound of the Lungs be Superficial, the Patient feels less Pain lying on his Back, than on his Side; but if it be deep, and any of the Great Vessels divided, it is the same in whatever Posture he be. If you introduce your Finger into the Wound some Days after it is made, and find the Lungs adhere to the *Pleura* round the Wound, it is a sign there is extravasated Blood.

The Florid Red Colour of the Cheeks in an Abscess of the Lungs, arises from some parts of the Purulent Matter, which being absorbed and mixed with the Blood, accelerate its motion in the numerous Blood-Vessels of the Cheeks, which abound with minute Veins and Arteries, more than most other parts. The Vivacity and Sparkling of the Eyes, is destroy'd by the Sharp, Tartarous Salts, which vitiate the Oleous and Balsamick part of the Blood; for the Crimson Tincture of the Mass, depends on the due Mixture of its Sulphurous parts; Besides the Air entering the Apostemated Lungs is corrupted, and cannot impregnate it, as in a State of Health. The sinking of the Eyes in their Orbit, proceeds from the general Emaciation of the Body. The turning back of the Nails happens, because these being Productions of the Skin, and this only supplied with a Serous Liquor destitute of Spirits, it decays, dries, shrinks, and by consequence draws them back with it.

If these Signs proceed from a Wound not penetrating the Breast, they cease in few Days upon Bleeding, and a good Digestion; but if the Lungs are corrupted, they continue and increase, and the same happens if the *Diaphragm* be loaded by any Extravasated Matter.

The *Flatus* is no certain sign that the Wound penetrates the Breast, and happens sometimes in Wounds of other Parts.

Be not too hasty to proceed to the Operation, if the Oppression be not very troublesome.

The

THE OPERATION.

When it is evident there is *Pus* lodged in the Cavity of the Breast, an Incision must be made for evacuating it ; but it would be a very great rashness to attempt this, without first considering there are several Cases in which it may be useless. If the Abscess be in the substance of the Lungs, no Aperture of the Breast can avail any thing towards the discharging of the Matter ; on the contrary, if the Abscess be on the Surface of the Lungs, and precisely in the place of their Adhæsi^{on} to the *Pleura* (which may be discovered by a constant and fixed Pain) there the Operation is absolutely necessary.

If a Wound be made by a Thrust, and happen to be low enough, or otherwise convenient for the discharging the Matter any farther, the Incision will be needless ; since the extravasated Blood may be evacuated through this Orifice, by placing the Patient in a proper Posture, and dilating the Wound if necessary.

The place of perforating the Breast, is sometimes in the Artists Choice, and sometimes directed by Necessity. The Place of Necessity is where the Matter presents it self ; as in Abscesses of the *Pleura*, or an Adhæsi^{on} of the Lungs to it: The Place of Choice, is that which the Operator likes best, when no Circumstances determine him more to one part, than another: Here the most proper Place is, between the third and fourth of the Bastard Ribs, beginning to count from below upwards, about four fingers breadth below the point of the *Scapula*, and about the same distance from the Spine of the Back.

Before the Operation, enquire if the Patient do not feel Pain in some part of the Breast ; if he has not been for some time past subject to Distempers of that Part, has not had a Pleurisie, or the like ; for in these Cases the Diaphragm often adheres as high as the third or fourth Ribs, and to make a Perforation lower, would be to no effect.

For making the Operation ; let the Patient sit on his Bed, and Assistants be planted by to keep his Body firm ; begin to count the Ribs from below upward, and when you are between the second and third of the Bastard Ribs, pinch up the Skin transversely, and let one of the Assistants hold one end of the folded Skin, and your self the other with your left Hand ; then make your Incision about two Inches large on the Fold from above downwards, that is lengthways of the Body. Then cut the *Latissimus Dorsi* transversely, for by any other

way of Section, the Fibres of this Muscle closing, would stop the Orifice of the *Pleura*, and hinder the evacuation of the Matter. Then continue to cut through the Intercostal Muscles. When you are come to the *Pleura*, cut through it with your Knife, guiding the Point with your Finger, lest it enter too far, and wound the Lungs or Diaphragm, which sometimes adhere to that Membrane. After the Aperture made, introduce your Finger to enlarge the Incision of the *Pleura*, and free the adhering Lungs, if no *Pus* appear; for if *Pus* come out freely, it is a sign, as I noted before, that this adhesion is Natural.

For the forcing out the *Pus*, oblige the Patient to lie down, and close his Mouth and Nostrils. If the Lungs fill up the Orifice, and endeavour to get out, you must thrust them back with a blunt hollow Probe with a hole at each end, for the Matter to pass through, or a Pipe adapted to the largeness of the Wound. If Flatuositities happen, long Pipes are very proper, because the Orifice of the Wound is so small and deep, it would be difficult without these, to give vent to the imprison'd Air. If you should make use of the Probe to discover whether you have pass'd through the *Pleura*, you may happen to separate it from the Ribs, and make another Vacuity, in which the Blood being collected will create a new Abscess, wherefore it is better to forbear this Tryal. If it be blood which comes from the Wound, you may let out a greater quantity, than if it be *Pus*, the latter containing, according to common Opinion, more Spirits, and the Patient sooner falling into a *Syncope*. Observe in dividing the Intercostal Muscles, to make your Incision in the midst between the Ribs, to prevent laying the Bones bare, which would leave behind it a Fistulous Ulcer.

THE DRESSING. You must begin here with putting in a Tent of Lint flat at the end, which enters the Wound, and Cupped or Headed at the other; this must be as little as possible, lest it offend the Lungs, and must be very soft lest it hurt the Ribs, and lay the Bone bare, which may cause an incurable *Fistula*. You must not forget to pass a double thread through the Tent, which may be fastned round the Body, if you please to hinder it from getting into the Cavity of the Breast. Next fill the Wound with Dressings arm'd with some good Digestives, lay on a Pledgit, then an Emplaster, and over all a Compress dipt in some good Defensive to prevent any Fluxion on the Part. The best Defensives are the *Syrplick Waters*, or in defect of these *Oxy-*
crate

crate well heated. These must be kept on with the Napkin. For this purpose fold your Napkin lengthways into three Plaits, Roll it at both ends, then apply its Middle upon the Wound, and beginning here, bring it round the Body, pinning it at its ends. The Napkin must be suspended by the Scapular. The way of making it is thus: Take a piece of Linen near six Inches broad, and long enough to reach from the Napkin before, to the same behind; then cut a hole in the midst lengthways, large enough for the Patient to thrust his Head through, then draw it down on the Shoulders, and pin one end to the Napkin before, and the other behind. Some chuse to fasten the two ends of the Scapular between the pleats of the Napkin; some likewise cut the ends of the Napkin six Inches or more lengthwise, and cross the cut Ends or Tails over one another.

THE CURE. The Patient must be kept lying on his Back, with his Head raised, and his Body half erect; he must be left undisturb'd till he finds a new Matter, which requires the taking off the Dressings to give it vent. If the Lungs present themselves and fill the Orifice, put them gently back with the long Pipe, so let the Pus discharge it self through its Cavity, and after the Evacuation, proceed to the use of good Detergents.

Blood comes away ordinarily the first three or four Days, next a Water for some days more, and after this Pus which by degrees thickens. If this be thick to excess, evacuated with Difficulty, and the Patient sensible there is some still remaining, Syringe the Wound with Vulnerary Injections made of the Decoctions of the *Birchwoods*, &c. with *Aloes*, *Myrrh*, *Frankincense*, or any other proper Ingredients; correct the Intemperature of the Air with Fire brought to the Patients Bed-side, during the time of Dressing him, and keep the Wound no longer open than is necessary, because the Air by its Acidity is apt to condense and coagulate the extravasated Matter, and hinder its Evacuation. If the Pus be thick, or there happen to be a mixture of Water, a Decoction of *Barley strained with a little Honey of Roses* is very good. If the Injections do not come away freely, make way for them with your Finger or the Pipe, or if the Lungs adhere, free them by introducing your Finger and turning it round. If the Blood be too Watry, and the Patient loaded with too great a quantity of Matter, take off the Dressings three or four times a-Day. There is a Flux of Matter very often, which lasts for three or four Months; when you

observe nothing but *Pus* come from the Wound, you may Heal and Cicatrize it. When the Air acts on the Blood extravasated in the Breast, it is very often Coagulated without being converted into *Pus*, and comes away in Clots. If the Lungs are wounded forbear Injections at first, at least leave out *Aloes*, because the Patient will be apt to bring them up thro' the Mouth. But after this is consolidated, inject with *Tincture of Aloes, Wine or Vulnerary Decoctions, with Honey of Roses* if the *Pus* be small in Quantity. After a thrust with a Sword, if Blood come plentifully out, and in a day or two after none appear, you must endeavour to close the Wound, the small Vessels only in all appearance being hurt, which by degrees are healed by the Glutinous Parts of the Mass. If the Wounds penetrate on both sides, or other occasions require an Aperture, you must not leave both Orifices open at once, lest the Air entering on both sides compress the Lungs, and Suffocate the Patient. In short, all Wounds of the Breast are dangerous, Death is commonly the end; or if they happen to be cured, some *Phthisis* or some lingring Distemper follows. Wounds of the Breast have sometimes been fortunate to Persons labouring under *Asthma's*, or other Chronical Infirmities by opening a Way for applying Medicines to the Diseased Parts.

Empyema's being usually Consequent on Distempers of the Breast, Pectoral Medicines conduce very much to their Cure; such are these extracted from the Famous Mr. Lemeroy: Sulphur drawn from Cinnabar of Antimony from 2 gr. to 8. Oyl of Brick used externally, Flower of Sulphur from 10 gr. to 30. Magistery of Sulphur, from 6 gr. to 16, Balsam of Sulphur from 1 drop to 6, Sugar-candy, Laudanum, from $\frac{1}{2}$ to 2 gr. Oyl of Nuts. Bugle in some Ptisan, Rose-Water from $\frac{3}{4}$ i. to $\frac{3}{4}$ vi. Flowers of Benjoin, from gr. 2 to 5, Mead.

Riverius relates, Cent. 1. Obs. 56: A young Fellow, a Shoemaker by Trade, of a Bilious Habit, was attacked with a Pleurisie; he had been Bled, and divers Remedies used without Success; the Fever continuing upon the fourth Day, to grow more violent than before, and the Pain of his Side encreasing. After this he eat a whole Apple with a Dram of *Frankincense* in it, drinking after it, four Ounces of *Carduus* Water, covering himself well, and Sweating, which did not abate the Fever at that time, but Sweating again twice or thrice the next day, he recovered.

In *Cent. 2. Obs. 78.* He relates, That a Maid of 25 years of Age very Bilious, had laboured for some Months under a Fluxion on the Lungs, attended with an incessant Cough, could not Sleep, had a great Pain in her Breast, a small Fever, never went to Stool, was exceedingly Emaciated, and her Life despaired of. *Riverius* observing a great heat in her Bowels, and a great Restriction of Body, prescribed an Emollient Clyster, and the losing six Ounces of Blood. After this two Issues between the Shoulders, and the following Laxative Pilsan to be continued for five Days. *R. Tamarinds ʒʒ. Boil these in Spring Water ℥iij. to ij. Infuse in this Liquor first strained and cool'd, Senna cleansed, Coriander Seeds, Liquorice bruised, ā ʒi. Red Roses, ʒi. Let the Patient take off this, ʒiʒ. each Morning about an hour before eating.* By the use of these slight things she got up the fifth day, and followed her ordinary Affairs. But still continuing bound and not sleeping, he prescribed her farther a Bolous of *Conserve of Roses, ʒi. Laudanum gr. i.* after which she rested four or five Hours, and continued to sleep several whole Nights after, without any other Remedy whatever.

In *Cent. 2. Obs. 79.* He tells us a Boy of 12 Years of Age was Pleuritick on the right Side, he bled him five times, prescribed all things usually given in the like cases, notwithstanding which the Fever grew higher with great Restlessness and Vehement Pain. The next day he ordered Chimney Soot well pulverized ʒʒ. in *Carduus Water*, two hours after the taking which all Symptoms ceased, and the Patient began to recover.

In *Cent. 3. Obs. 39.* He tells us, that a Child of five years old was attacked with a Pleurisie, attended with an acute Fever. He gave him the usual Remedies for the space of five Days, bleeding him several times, after this applying two Cupping-Glasses on the side affected, and Scarifying deep; from these Incisions issued out a Sanies continually, after which the Fever and Pain ceased: He applied Bere Leaves on the Scarifications, and the Flux of Sanies continued two Days longer; after this came forth a true Pus, and the Patient perfectly recovered.

In *Cent. 4. Obs. 39.* He observes that all Pleuritick Patients who Vomit at first, are Cured.

Fab. Hildanus, Cent. 4. Obs. 26. relates the History of a Pleurisie in a Person of 30 years of Age. In the first place, he prescribed him a good Regimen, then a Clyster, and bled him in the Arm. To the side affected, he used Anodyne

Fomentations, and Internally Pectoral Medicines, with all other things usual on the like occasions. Upon the fourth day the Pain in his side ceased, and his expectoration was easie. The seventh day a great Sweat arose, and the Patient recovered; but on the tenth he was seized with a violent Fever, and Shaking, and dyed the thirteenth. *Hildanus* conjectures, the case of this fatal Turn might be his excessive using the Privileges of Matrimony, being lately marryed to a very beautiful Woman. Upon this occasion he observes, how pernicious all commerce with Women is in acute Pains.

R E M A R K S.

Fabr. Hildanus, Cent. 2. Obs. 26. relates, that a certain Person who had for many years been Asthmatick, and had a Cough, dyed Emaciated to the highest Degree. Upon opening the Body, he found Obstructions and Schirrosities in the Liver, Spleen, and other Viscera, and in the Lungs a Hard, Rough Stone about the bigness of a Nut, inclosed in a Carnous Case. There were diverse Tubercles along the branches of the *Aspera Arteria* all Schirrous, without any Ulcer in the Lungs. He found two pound of Water in the *Pericardium*, and a great quantity in the Cavity of the Breast. He relates farther in the same Observation, That in opening of a Woman who dyed of a *Phthisis*, he found a great quantity of clotted Blood in the Lungs, besides several small Stones, and in opening the Body of a Man, he found diverse Stones part black, and part white.

In *Cent. 2. Obs. 30.* He says, he found some Fragments of the Lungs in the Urine of a Peasant.

In the *Miscellanea curiosa Obs. 41.* There is a Relation of a certain Person of 36 years of Age, naturally Hot, Dry, and Phthical, who was found dead by his Wife's side. The preceding day he had dispatched all his ordinary Affairs. His Wife rising in the Morning made the least noise she could, for fear of disturbing him, imagining he was a sleep; but wondering he did not come down after some time, went up and found him Dead. This Accident made a great Noise, and Physicians were sent for to discover the Cause of his sudden Death; in opening the Body, a large Swelling was found near the *Cartilago Arytencoides*, resembling a Scrophulous Tumour; the Lungs were Ulcerated, filled with Purulent Matter, and great part of their Substance wasted. Upon opening the *Trachea*, and examining the Swellings, it appeared to be a Portion of the Lungs, which being stop't there, had Suffocated the Patient.

Bartholin

Bartolin Cent. 2. Hist. 56. relates that a certain Person dying of a Dropsie of the Breast, he found the two Lobes of the Lungs wasted, especially the lower, nothing remaining besides the Membrane which invests them, which was thrice as thick as the *Pericardium*, and extremely distended with the Water contained in it. The Heart was larger than was natural, flabby, and filled with a black Blood.

C H A P. XVII.

Of the Extirpation of the Cancer.

THIS Operation is a Total Extirpation of that Raging Tumour, to free the Patient from all its mischievous consequences.

THE CAUSE of this cruel Disease is a sharp corrosive Blood or Lympha, which discharging it self on some part, corrodes and tumefies it. If it invades the glandulous parts, it probably arises from a virulent *Lympha* becoming Corrosive, not unlike *Aqua Fortis*. If the Muscular or Flethy Parts, it may be derived from the same ill qualities in the Blood.

The Cancer then is a Round, Unequal, Livid, Painful Tumour, formed by some Sharp and Corrosive Humours. In a Cancer the Tumefied Veins creep along the Surface of the Skin, resembling the Claws of a Crab, from which appearance it derives its Name. The roundness proceeds from the Figure of the Glands, in which this Distemper is seated, for the Flux of Humours distending them equally, they preserve their Natural Figure. The Pain is more vehement in Cancers of the Glandulous Parts than others, because these are furnished with an infinity of Nervous *Fibrille*, which are allowed by all Men to be the immediate Organ of Sensation. The *Lympha* contributes much to their encrease, the Glands being the Receptacles of that Liqueur. When the most corrosive parts of the Blood escape out of the Vessels, an Ulceration ensues, and the slow progress of this, proceeds from the difficulty which the parts of the Blood find in making their way by the slowness of the Circulation.

Some Cancers are Internal, others External, some Ulcerated, others not.

THE SIGNS. A Cancer often in its beginning, is not larger than a Pea, and grows at some times faster, at others slower. At first it appears like a Little, Hard, Blackish Swelling, troublesome by its excessive itching. This Tumour after some time encreasing, appears hard, of a Lead-colour and Livid. The Pain at first is tolerable, but after becomes Violent, and when the Ulceration is compleated strikes to the quick, and emits an intolerable stench. In its Progress when it is upon the point of Ulcerating, there is an excessive Heat, with Pulsation and Pricking: The Neighbouring Veins are Swoln, filled with a black Blood, and creep along the Skin, resembling the Claws of a Crab. Cancers seldom come of themselves, but most commonly proceed from Schirrhous or Scrophulous Tumours ill Cured. The Principal Seat of Cancers is in the Glandulous parts, especially the Breasts of Women, and sometimes the Mouth, Nose, Lips, &c. and the strange aptness to degenerate, makes all Ulcers of these parts justly to be feared.

A Cancer not Ulcerated is called Occult, and Apparent if it be Ulcerated. The Signs which discover a Cancer is Ulcerating, are Accession of Pain, Pulsation, an unusual pricking, and an increase of the Heat and Swelling.

Occult Cancers are best left untouched, for fear of irritating them, and hastning the Patients End. Cancers in the Breasts and Glandulous Parts are very dangerous; because these parts are very sensible, and more susceptible of ill impressions than others. This arises from the abundance of *Lympha* in them, which growing sour, do's more mischief than in parts where it is less plentiful. External Cancers are very difficultly medled with, Medicines being more apt to exasperate, than heal them.

Before Operation, try if they are curable by General Methods, as observing a Good Diet, Mild, Repeated Purging and Bleeding. The Hæmorrhoidal Flux in Men, or the *Menstrua* in Women, afford great Relief in this Disease: Sharp Medicines preposterously used, make the Disease incurable. The Cure of a Cancer not Ulcerated, must be attempted by Mild and Gentle Remedies; which cool, allay, dissolve, and repel the Matter kindly, without raising any Fermentation; such are *Mulberry*, *Plantane* and *Strawberry Waters*. If these prove ineffectual, then proceed to Operation.

THE OPERATION,

When you first perceive in the Breast a Small, Hard, Permanent

manent Tumour in the Glandulous Parts, with other Symptoms of a growing *Cancer*, extirpate it. Place the Patient in a convenient Posture, to lay open the Tumefied Gland, then free and take it off. If any Vessels appear, which may give occasion to fear a Hemorrhage, tie these before you cut out the Tumour.

Tho' the *Cancer* extend over the whole Breast, yet if it be moveable without adhesion to the Ribs or *Sternum*, there is room to hope the Operation may be successful, especially if the Patient be young, and have a good Habit of Body.

To perform the Operation in this Case: The Patient being placed on his Back in his Bed, lift up the Arm on the same side the *Cancer*, and draw it back; then embrace the whole Breast with Forceps made of two half Crescents, which may pass over each other when the Forceps are shut. The Breast being in this manner held fast, cut all off with a crooked Knife very sharp and flat, beginning beneath, that the Mammary Vessels may be divided last of all, for fear of a Flux of Blood. Take the whole Tumour off as quick as may be, close to the Ribs. This is the manner of performing the Operation, when the *Cancer* is Ulcerated.

If the *Cancer* be not Ulcerated, make a Crucial Incision through the Skin, without entering the Glandulous Body; then separate the four Flaps, and embrace the Carnous Tumour with the Pincers above described, and take it off with a sharp Knife. If you are not provided with Pincers of this kind, Gripe the Tumour as well as you can in your Hand, or if you cannot conveniently do this, use a sort of a Steel Fork to hold it, and so cut it off.

The Operation but a little while since, was commonly performed in the following manner, but it is too cruel. The Patient was laid on his Back on his Bed, the Surgeon raised the Arm on the same side with the *Cancer*, drawing it back to lay the Breast fairly open; then he passed a Needle with a very strong Thread through the Basis of the Breast, and another after the same manner to cross with the former. Next he tyed the four ends of the Thread together, and made a Knor, with which he drew the whole Breast up, and then cut all off as near the Ribs as possible, with a very sharp Knife. He began to cut in the lower part of the Breast, ending at the Vessels next the *Axilla*, and leaving a small portion of Skin to cover the Vessels, for the more easie stopping the Flux of Blood. This way of Operating

rating would still be good, if we had not a more convenient way of apprehending the Breast, after the manner above described.

THE DRESSING. Gently compress the sides of the extirpated Breast, to squeeze out the Blood and Humours, and lightly pass over the Wound an Actual Cautery to disperse the Humours; and lastly apply the Vitriol Button to stop the Flux of Blood: Take Vitriol grossly powder'd, wrap this in Tow, make it up round like a Button, and apply it to the Vessels; lay over this Pledgits with a Restraining Powder, and cover them with a large Emplaster with a Compress over, and keep all on with the Napkin and Scapular, described in the *Gastrophagia* and *Paracentesis* of the Breast.

The following Bandage which retains the Name of *Heliodorus*, a Greek Physician who first invented it, is very convenient. Take a Linen Girth three inches broad, and of a competent length to go round the Body; sow two Straps in the middle of this, about two inches or more distant from each other, and long enough to reach so as to be fastned behind, apply the middle of the Girth on the Breast, and passing it round the Body, bring its ends as far back on the first Round as they will extend, and pin them there; then take up the two Straps, cross them, pass one over the Right, the other over the Left Shoulder, and fasten them behind to the Girth.

THE CURE. Apply Suppuratives to procure a good Digestion, to draw out the Corrosive Matter remaining in the Part, and hinder the Cancer from making farther Devastation; then Deterge well, and Cicatrize the Wound.

Before I leave this Subject, it is necessary to let the Reader know, some Authors have pretended to cure Ulcerated Cancers by the use of Medicines only, without Manual Operation. Some assure us, this has been effected by the Application of red Snails, taken out of their Shells: These, they tell us, leave a slime on the Part, their Bellies are corroded, they swell to a vast size, and at length burst. If this Method fail of the intended Success, it has this advantage, that it may be tried with little Difficulty.

Riverius Obs. 26. tells us, a young Surgeon, a Stranger, cured a Cancer beginning to Ulcerate in a Woman of 50 years of Age, with this Medicine; *R. Crude Sublimate, ℥iij. Sal Armoniack, ℥ij. Arsenick, ℥i. Aqua Fortis, ℥i. Put all these into an equal Weight of Distilled Vinegar; then Di-*

still

still all over, till the remaining Matter obtain the consistence of a Past. He bathed well the suffering Part with Rags soaked in Wine well warmed, rubbing it a little roughly to enrage it. Then he spread a little of his Composition on a Pledgit, six times less than the Tumour, applying this on the Part, and leaving it on for the space of 24 Hours, in which time it made an Escar about six times as large as the Pledgit, and equal to the Tumour; after the Separation of which, he incarned and cicatrized the Wound. If any part of the Tumour remain'd, he consumed it with *Burnt Alum* and *Præcipitate*, using only dry Lint for the Incarning it. The most observable Accidents in this Process of Curing, were upon the Application of the Medicine; the Fever immediately grew higher, a Vomiting, Flux and Copious Urining ensued, which Symptoms lasted for two or three Days.

The same Author assures us, He had cured a *Cancer* of 13 years standing, with very painful Carnosities in an Ancient Woman, with so innocent a Medicine as *Night-shade*, *Plantain* and *Rose-water*, with the addition of *Honey of Roses*, exposed for some time to the Sun, and then applied. The same he tells us, he had successfully applied in another Cancerous Ulcer in the Breast.

Fabricius Hildanus uses the following Method; a certain Woman he tells us, had an Occult *Cancer* in her Breast, proceeding from Coagulated Milk. She having abundance of Milk, and happening to fall into a Suppression of Urine, an Inflammation ensued, which curdled it. After the Inflammation was gone, there remained a Tubercle or small Lump, about the bigness of a Bean; which being neglected, continued for the space of 40 Years without any Pain, but the Woman growing Old and Decrepit, the Tumour began to encrease, grow Painful, and extend quite to and under the Arm-pit. Having procured her self to be bled in the Arm, on the same side with this Cancerous Tumour, she was deprived of the use of it. Our Author at the entreaty of this miserable Woman, undertook a Palliative Cure. This he began with prescribing her an exact order of Living, then purging her with the following Potion. *R. Leaves of Sena, ℥i℥. Dodder, Fumitory, Scabious, Harts-Tongue, of each ½ Handful, sharp pointed Dock, Figwort, Polypody of the Oak, the inner Bark of Birch-root, ā ℥i. Anise-seeds, sweet Fenil-seeds, ā ℥ij. Liquorice, ℥℥. Boyl these Ingredients in Water, so that after straining, there may remain ℥viiij. Take a Moiety of this Liquor, to which add Syrup of Roses with*
Rhubarb

Rhubarb, Agaric and Sena. Mix and make a Potion. This purged the Patient very gently. The next day he bled her about four Ounces in the Right Foot, and two days after purged her with the same Potion, with the addition of *Confection of Hameck*, ℥ij. *Compound Syrup of Roses*, ʒi. Externally he used the following Liniment twice a Day to the Diseased Parr. ℞. *Oyl of Earthworms and Foxes*, ā ʒij. *Yelks of Eggs*, and *Oyl of Sweet Almonds*, ʒiſs. *Oyl of Scorpions*, ʒi. *Oyl of Spike*, ʒi. Mix these for use. These Inunctions removed the Pain and Swelling in the Arm; the Breast continued in the same State, and she felt no Pain. Notwithstanding which, he applyed this Emplaster. ℞. *Empl. Diapompholygos*, ʒij. *Diapalma*, ʒi. *Calx of Lead washed*, *Calamy Stone*, ā ʒſs. With a sufficient quantity of Juice of *Cranes Bill*, make up an Emplaster according to Art,

R E M A R K S.

Fab. Hildanus, Cent. 3. Obs. 88. Relates the Case of a Woman of 50 years of Age, who had a small Turbercle on the right Nipple: Though this Tumour at first was hard, and something troublesome; yet being small, and not very painful, she would not suffer it to be meddled with; but the Pain after some time encreasing, she called in a Surgeon, who applyed Emollient Medicines for the space of a Month; the Pain increasing, the Tumour broke, and a sanious bloody Matter issued out, resembling Water after the washing of Flesh. This Tumour at length became Painful, Stinking and Ulcerated, in so malignant a manner, that it corroded the Breast to the Ribs, and up to the Arm-pit. The Patient felt great Pain, Restlessness, a constant Nausea, and an Aversion to all sorts of Aliments, and dyed in this Condition. This is an eminent Instance, how dangerous it is to meddle with Occult Cancers.

The same Author, *Cent. 3. Obs. 86.* relates, that he had seen a young Man whose Tongue was so thick, and had so copious a Flux of Water in his Mouth, that he could not Articulately pronounce several Words. After some time a small Tubercle appeared at the end of the Tongue, which grew to the bigness of a Vetch, and after of a Bean, then of a Chestnut, without the least Pain; In fine, it encreased to the bigness of an Egg, remaining still hard and indolent, till in the issue it killed the Patient.

C H A P. XVIII.

Of the Operation of the Bronchotomia.

THIS Operation is an opening of the *Aspera Arteria*, to give the Air liberty of entering the Lungs in Tumours of the Throat.

THE CAUSES. These Tumours sometimes are occasioned by external Hurts, straining of the Voice, and long or much talking; sometimes the Humours are soured by vehement Passion, and create an Inflammation of the *Larynx*. This Inflammation opposes the free Circulation of the Blood, and the Blood endeavouring to force a passage, encreases the Tension; and the part encreasing in its Dimensions, presses the *Aspera Arteria*, and hinders the passage of the Air, and hence suffocation ensues.

The immediate Cause of Quinsies is Sharp, Vitiated, Lympha, which Corrodes, Inflames and Obstructs the Membranes, Glands or Muscles of the Throat. The Remote or Occasional Causes, are those before mentioned, or some excessive sharp or sour Aliment, some Preternatural Substance swallowed by neglect, which being lodged in the Throat, by its Compression, may cause Pain and Fluxion: Or lastly, Mercurial Inunctions; which raising a Salivation by the Sharpness and Caustick quality of the Serum, is very apt to inflame their Parts. There are two sorts of Quinsies, the *Genuine* and the *Spurious*; the *Genuine* is attended with a Fever, and Difficulty of Breathing, the *Spurious* or *Bastard* is a simple Inflammation of the Throat, without any other ill Accident.

THE SIGNS which discover a Quinsie, is Breeding, are difficulty of Swallowing, and Breathing, a Pain in the Gula, a great Heat and Burning in the Throat, a pain in stirring the Neck, a thick and glutinous Spit, and a vehement Head-ach. When the Quinsie is come to Perfection, the Patient finds a great difficulty in Breathing and Swallowing, Drinks, and all Liquid Aliments revert by the Nose, the Tongue is flabby and soft, the *Fauces* are full of Saliva, Respiration is intercepted, and the Patient cannot lie down without danger of Suffocation. When the Quinsie is very great, the Tongue livid and loaded with a thick, saline, bitterish

terish Matter, the Face is swoln and inflamed, its Veins are Tumid, the Fever very acute, with an intolerable Thirst, and a bitter Taft in the Mouth; the Eyes stick out, and the Pulse is wavering and small.

Children are more subject to Distempers of this kind, than grown Persons, their Throat being more clogged with Pituitous stuff. When they are attacked with this Distemper, their Countenance is pale, they complain of an external pain in the Neck, Hawk very much, and what they bring up, is thick and glutinous.

A Quinsie after a Fever, without any preceding Tumour in the Throat, is very dangerous; and the same Prognostick holds in all pain and difficulty of Breathing, without any apparent swelling in the Neck. If the Lungs are Inflamed in a Quinsie, the Patient most commonly dies upon the seventh Day, or if they exceed that, *Hippocrates* assures us an *Empyema* will certainly follow. The Distemper by its sharp Nature causing a Peripneumony, which terminates in a Suppuration. Some Authors however deny any Quinsie ever to have had such a *Crisis*. If the Fever does not abate, it is an ill sign, and if the Patient foams at Mouth, Death is very near. If the internal Inflammation be communicated to the external Parts, and a Swelling arises with a redness on the Breast, it is a very good sign.

In a Quinsie, the Patient sometimes can swallow Solids only, and not Liquids, and sometimes Liquids, and not Solids. When the Inflammation is seated on the Palate, *Uula*, and Neighbouring Parts, he cannot swallow Solids, by reason of the pain they cause, and these parts are disabled from thrusting them down the *Gula*; but Liquids make their way by their own weight. If the Inflammation be only on the Muscles of the *Pharynx*, he swallows Solids more easily than Liquids; because the Inflammation contracting the *Oesophagus*. The Liquid Aliment being protruded by the Tongue, and finding no passage by their Fluidity, fly up on every side, and revert by the Nose.

Tumours in the Throat must not be neglected, because the *Lympha* stagnating there in the Vessels and Glands, is very apt to breed a Quinsie by its sharpness. This Distemper is not so dangerous in growing Children, as in Adult Persons, it ordinarily proceeding in these from the Redundance of a Nutritious Juice, void of all Acrimony, but in Adults it is caused by an Acid, Vicious *Lympha*. If the Remedies prescribed in this Distemper prove ineffectual, and the Patient

tient being in danger of Suffocation, you must proceed to the Operation.

The OPERATION.

This is not to be undertaken rashly, and therefore first enquire whence the difficulty of Breathing proceeds, which if caus'd by an Inflammation of the Lungs, will frustrate your Hopes. It may happen the whole length of the *Aspera Arteria* may be inflamed, and filled with a thick *Lympha*, in which case it is best to forbear making any Incision.

When you intend to perform the Operation, place the Patient in a Chair, or on his Bed, and plant a Servant behind to hold his Head, resting on his Breast, being careful not to draw it too much back, lest he intercept the little Respiration remaining, and suffocate him before you can finish your Work. The most commodious and secure place to make the Aperture in, is about an inch below the top of the *Larynx*, between the third and fourth Ring of the *Aspera Arteria*. But in great Inflammations where the Muscles are very much Tumefied, and it is difficult to count the Rings, you may make your Operation in the middle of the Windpipe. To make the Aperture, pinch the Skin up transversly if possible, and make a Longitudinal Incision; then separate with the point of your Incision-knife, as finely as possible the Bronchial Muscles, and the *Sternothyroidæi*, in doing which the Line which separates them, will serve to guide you. When you have laid the *Aspera Arteria* bare, with a Lancet, divide the carnous Membrane which unites the Cartilaginous Rings, having an especial care not to cut the Recurrent Nerves, which inevitably destroys the Voice, these Nerves furnishing Spirits to the Muscles of the Tongue. Avoid hurting the *Glandule Thyroidææ*, which are Receptracles of the *Lympha*, the effusion of which, would make an inundation in the Wound, the Air being apt to corrupt the Cartilages.

The Lancet must be kept in a streight Line with the Scales, by a Tape wrapt round to its Point; before you take out the Lancet, introduce a Probe into the Orifice, and on this side a short, flat *Cannula* or Pipe, a little crooked at the end. This must not be thrust too far, for fear of hurting the hinder part of the *Aspera Arteria*, and causing a Cough. The Pipe must have two Rings to pass Ribbons thro', which are to be ty'd about the Neck, but not too strait, for fear of choaking the Patient; leave the Pipe in the Wound

Wound till the Inflammation be over: You must not apply any Tow to the end of the Pipe, because the Incision is made for the free passage of the Air; besides there is danger some part of it may be sucked through the Pipe, and suffocate the Patient. To take off the chillness of the Air, before it enters the Lungs, keep a good Fire constantly in the Chamber, or if the Party be not in a condition to bear this Expence, bring a Chafingdish of Coals to his Bed, and draw the Curtains: When you perceive the Air recovers its Natural passage by the Mouth, then take out the Pipe and dress the Wound.

THE DRESSING. Bring the Lips of the Wound even together, which is easily done with a small Fillet, lay on the Wound a Pledgit arm'd with some good Balsam. The best Application to simple Wounds not contus'd which admit of a prompt Reunion, is a Pledgit dipt in some Styptick Water. This is the celebrated Balsam which Mountebanks make so great a stir about, that with which they cure so speedily the Cuts they sometimes make upon the Stage, to give the gazing Multitude a proof of their rare Skill.

After the Lips of the Wound are brought together, keep them close with the uniting Bandage. To make this, take a Fillet about two inches and a half broad, and an Ell long, slit a hole in the midst of it lengthways, more than two inches long, rub it at both ends, and pass one end or head through the hole in the midst, put the Fillet about the Neck, apply the slit on the Wound, and draw the two ends or heads to keep the Lips of the Wound together, being careful not to straiten it too much; for fear of inflaming the suffering part; then bring the ends of the Fillet behind, and continue to make as many rounds about the part, as the length of the Fillet will admit of, pinning it where it ends.

THE CURE. The Patient must be fed with good Nourishing Liquids; for all solids in Deglutition, are apt to compress the *Aspera Arteria*, and put it into some Motion, which obstructs the Reunion. If you perceive the Wound is inclined to Suppurate, take off the Dressings, and put a little Balsam under the ordinary Bandage; but if no signs of Suppuration appear, let the Dressing remain untouched, till the Coalition be perfected. For simple Wounds, often when no Styptick Water is applyed, are cured without Suppuration.

When

When Quinsies are curable without Manual Operation, the Method of Treating them is as follows. The Patient must be confined to a regular Diet; for Abstemiousness and spare feeding are useful in all Inflammations whatever. We may account these in effect a perpetual Bleeding, since the Blood not being supplied in proportion to its expence in Transpiration, must needs wast. His Chamber must be kept moderately warm; both extremes of Heat and Cold being equally mischievous: An Excess in the first putting the Blood into a violent Agitation, necessarily heightens the Inflammation; on the other hand an Excess in the latter, produces the same effect by obstructing the Circulation, and hindering the Reflux of the Blood in the Veins. I Assign the Arteries as the Channels which convey the Matter of Obstructions, because these discharge into the parts the Blood forced through them with great impetuosity, by the contraction of the Heart, the Veins being wholly calm, and without Pulsation. The most commodious Posture of Body is erect; because when it is bended, the Vessels are prest together, the Circulation is less free, and the Air do's not so easily enter the Branches of the *Trachea*.

If the Patient cannot swallow Liquids, let him remain for some time without Aliment, rather than do any Violence to the suffering part. The less he eats, the more speedy his Cure will be; Men may subsist for several Days without Food, especially in Acute Distempers. The want of Sleep, which is a Symptom frequently attending Quinsies, is mischievous, continual waking, being apt to inflame the Blood. To remedy this, endeavour to procure Sleep by Somniferous Emulsions made with the four cold Seeds, and white Poppy Seeds in Elder Water: Let a Glas of this be taken going to Rest, keeping the Mind Serene, and free from all disturbing Passions. In danger of a Suffocation, bleed the Patient instantly in the Jugular Veins; nothing can discharge the Superior parts more immediately or effectually, than an Aperture of these Vessels; but here observe not to hazard strangling him with a Ligature about the Neck, which some indiscreetly make. To prevent this, compress the Neck on the side and behind with a Filler, without passing over the *Aspera Arteria*, this Ligature is sufficient to tumifie the Vessels. If for any reason the Patient cannot endure Bleeding, apply Cupping-Glasses to the Thighs, to determine the Blood to the inferior parts.

Clysters are to be frequently given; These may be made with the Decoction of *Mallows*, *Marsh-mallows*, *Brank-Ursine*, *Chamomil*, with the addition of *Honey of Mercury* ℥i. the *Yelk of an Egg*, *Oyl of Lillies* ℥i. *Nitre refined* ℥i. To all his Liquid Aliments, add *Oyl of sweet Almonds* ℥i. *Cream of Tartar* ℥i.

This Gargarism is good in Quinsies. ℞. *Water of Elder Flowers* ℥ij. *Water of Plaintane* ℥i. *Spirit of Wine* ℥vi. *Spirit of Sal Armoniack* 20 drops, Mix these, and Gargle the Patients Mouth. Or, ℞. *Decoction of Elder Flowers* ℥viii. *Spirit of Wine* ℥ij. *Honey of Roses* ℥℥. let the Patient gargle his Throat with this Mixture, or if the Inflammation of the Muscles make him incapable of doing this, let him retain the Liquor in his Mouth, frequently spitting it out and renewing it.

Externally apply Discutient Remedies to the Throat, the choicest of which are Volatil and Spirituous Liquids, such as *Spirit of Wine Camphorated*, *Volatil Salt of Urine*, dissolved in a little *Elder Water*. Emollient Cataplasms have a very good effect, to make these: ℞. *Flowers of Scabious*, *Mallows*, *Chamomil* and *Melilot*, ā one handful, *Hemlock* half a Handful, *Liquorice* ℥i. *Album Græcum* ℥i. Boyl all in Milk, and then apply the Cataplasme. Or, ℞. *Crums of White Bread* a Handful, *Roots of Althæa*, *Bulbous Roots of Lillies* ā ℥i. *Linseed* ℥vi. *Fenugril* ℥℥. Boyl all the Ingredients in Milk, and so pass them through a Strainer: Add in the Straining, *Oyl of Sweet Almonds*, *Oyl of Lillies* ā ℥vi. *Fresh Butter* ℥℥. *Saffron* ℥i. the *Yelk of two Eggs*. Cataplasms made of *Swallows Nests* are excellent, because these as well as all Animals Dungs, abound with Nitrous Salts. All these enumerated Remedies, together with all proper Emplasters promote Suppuration; and therefore assist in removing the Obstruent Matter. After Suppuration, deterge the Wound with a Decoction of *Barley*, and *Honey of Roses*, adding if necessity require, a little *Spirit of Salt*.

Bastard Quinsies caus'd by a thick, glutinous *Lympha* clogging the Throat, may be cured with a Gargarism made of the Decoction of *Sage* and *Mallows*, ā one Handful in a Quart of *White-wine*, till it be reduced to a Pint, straining the Liquor, and dissolving a little *Sal Armoniack* in it.

Sudorificks are very good in this Distemper; for Instance, *Powder of Vipers*, *Diaphoretick Antimony* ā gr. xv. taken in a Glas of *Carduus Water*, the Patient being well covered and Sweating after it. Outwardly *Diachylon* and

Vigo's

Vigo's Emplaster are good ; Liniments may be made of Oyl of sweet Almonds, Marjoram, Mint, applied warm to the part affected.

If these Glandulous Tumours are not curable by Discutients, you must have recourse to Maturing Medicines, to procure Suppuration, and break the Abscess.

REMARKS.

Fabricius Hildanus, Cent. 3. Obs. 27. relates the Case of a very Ancient Man, who had a Quinsie after a Dysentery of three Months continuance, which he conjectures was caused by the Matter of those Pustles, which ordinarily appear on the Lips, being detained in the Throat, and creating a great Inflammation there. The same Author relates, *Cent. 6. Obs. 15.* He had seen a great Quinsie proceeding from the Application of Pepper, in a Relaxation of the *Uvula*.

CH A P. XXIV.

Of Bleeding.

Bleeding is the dextrous opening a Vein or Artery, to extract a certain quantity of Blood, in order to preserve Health, cure some Distemper, or at least give relief to the Patient.

THE CAUSE. Bleeding is commonly required in Intermitting, Continual, Malignant and Spotted Fevers. In violent Pains, Apoplexies, Quinsies, Inflammation of the Lungs, Pleurifies, *Asthma's*, and all Diseases arising from Obstructions, or attended with Sanguineous Eruptions on the Skin, as the Meazles, Small Pox, all Ebullitions of the Blood, Biles, Carbuncles and *Erysipelas's*. It is very serviceable in Women with Child, to prevent Flooding and Abortion, and in their Labour to facilitate and advance the Birth. It conduces very much to the speedy Cure of Abscesses, Wounds, Ulcers, Fractures and Dislocations, to divert all Defluxions on the wounded Part, and prevent all ill Accidents, which ordinarily attend these cases. Bleeding is likewise very much used in difficulty of Breathing, and all Repletion, &c.

THE SIGNS which indicate Bleeding, are the same with the Causes above recited.

THE OPERATION.

Before this Operation be prescribed or performed, all Circumstances ought to be considered, *viz.* the Nature of the Distemper, the Patients Strength, Age, Complexion and Sex, the Season, Climate, &c.

Great Diseases require large Evacuations, milder yield to less. As for Age, bleeding is convenient at all times, if the Disease be pressing. *M. Patin* bled a Child within three days after it was born, who lived after to a very great Age. If necessity require, fear not to bleed Ancient People, they not being exempted from a multitude of Diseases, whose progress cannot be checked by any other way: But in Persons between fifty and sixty years of Age, you may bleed boldly, having nothing to fear. Much greater heed is to be taken to the Patients Strength, than his Age; for if his Strength be quite spent, though his Distemper seem to plead very much for bleeding, you must forbear, because in this Case, it would throw him into extreme danger of his Life. Drunken Men must not be bled, because the Stomach being overcharged, stands in need of all its Heats to perform Digestion. Persons who have undergone a long Abstinence, are not proper Subjects to bleed, the Refraining from eating being a gradual and constant expence of blood. *Guido de Cauliaco* pretends, that in such Bodies as are soft, lax, thin and weak, ought seldom to bleed; but such as are fleshy, firm and sound, who have large and ample Veins, may bear a more frequent Repetition of it. Heavy Bodies which abound with gross Humours, more easily sustain frequent bleeding, than Bilious Persons whose Humours are more subtil and fine, the blood being a sort of check to the Bile. I do not think these Rules are infallible, and always to be observed, since Bilious Persons are very subject to *Erysipelas's*, Effervescences of blood, Inflammations, and other Indispositions, which oblige them to have recourse to Bleeding. Those who feed on Meats which breed Copious blood; such as Bread, and Flesh Meats, may bear more frequent bleeding, than Persons who use a less nourishing Diet. Married Men who have craving Wives, must not bleed often; the great Consumption of Spirits in these Men, assisted by the Exhaustion of their blood, would infallibly throw them into an extreme Weakness. Persons naturally lean, bear bleeding better than those whose leanness proceeds from Labour, Abstinence, want of Sleep, or long Distempers, *Celsus* is

of

of Opinion, that Fat and full Bodies best of all bear bleeding, and that it is healthy for them. Women ought not to bleed so often as Men; their Bodies being more tender, lax, delicate and soft than Men, and by consequence more porous and perspirable, not to mention those Monthly Evacuations of blood, which excuse them from this Operation.

Bleeding may be practised at all times, if necessity urge it. Regard is had to the properness of the Season only in bleeding by way of Prevention. In this case the Spring is preferable to all the other parts of the Year; because the Weather growing warm stirs and ferments the Blood. The Autumn is not improper, its beginning usually proving temperate. This bleeding for prevention, is by no means to be allowed of in very hot or very cold Weather. Both these extremes are equally bad, in the first all farther Evacuations encrease the expence of Spirits, and in the last lessen the Natural Warmth, and leave Men unable to bear the Rigour of the Reason. If it shall be requisite to bleed in excessive hot Weather, chuse some Day Overcast or Rainy, because the Dissipation of the Spirits is not so great at such times. Bleeding in the Morning, is better than any other part of the Day, especially in Mechanicks and Labouring Men; because the Reparation of the Spirits by the Preceding Nights Sleep, put the Patient in a condition to bear the Operation. If any Business or Accident hinders bleeding at that time, defer it till Night going to Bed, the Repose of the Night, soon giving the blood opportunity of resuming its ordinary Course. Persons usually bleeding at certain times, must continue this Custom, the Omission of which, will certainly endanger a loss of Health.

Hippocrates forbids bleeding in Big-bellied Women; for fear of Abortions. He tells us, Sect. 5, Aphor. 31. *A Big-bellied Woman if she be bled Miscarries, if the Fœtus be very far advanced.* The Veneration paid to this great Man, must not oblige Physicians to follow his Sentiments to the Letter. Experience shews, several Women with Child have been saved by Bleeding, and that very Copious too; for more ample Account of this, I shall refer the Reader to the Remarks on Deliveries, where is related the History of a Woman, who was bled eight and forty times during her going with Child, to free her from a cruel Oppression, which threatened her with Suffocation, notwithstanding which, she was delivered of a living Child. However this Famous In-

stance must not be abused, to encourage the too bold use of the Lancet in these Cases. Bleeding in Women first with Child is dangerous; because the *Placenta* not adhering firmly to the *Uterus* in the beginning separates, the Blood is the Life of the Animal, decays the Constitution, and causes an Abortion: But if a Woman have a great Repletion, and her Vessels be overcharged with Blood, an Evacuation in necessary to prevent ill Accidents.

The inconveniences which usually require bleeding in Big-bellied Women are Lassitude, Heaviness of Body, Cholic Pains, difficulty of Breathing, Vomiting, Flux of Blood from the Nose or Womb, Varicose Swellings of the Legs, obstinate Pain in the Teeth, Falls, violent Commotions or Disturbances of Mind, all which put the Blood and Spirits into Disorder. But here it is ever to be observed, that in bleeding Big-bellied Women, the Evacuation must not be exceeding large, upon any pretence whatever, for fear of a *Syncope* and Abortion.

Women with Child are commonly bled in the seventh and ninth Month, and sometimes there is a necessity of bleeding them in their Labour, to facilitate their Delivery. Maids must never be bled, without first enquiring, if they have their Courses on them. Young Girls who never had, and are now of an age proper to expect their Courses, must not be bled. Bleeding in this critical Juncture, especially in the Arm, unavoidably defers the Evacuation, and perhaps may endanger the Patient's Life. Young unmarried Women, ought not to be clandestinely bled in the House where they live, without the knowledge of the Family: If such Person come to a Surgeons House, and desire to be bled, upon pretence of preventing some Distemper; it I confess is something a Nice case, for if you bleed her never so little, if she apprehends her self to be with Child, she may unbind her Arm, and make as great an Evacuation as she pleases.

The most General Rule in respect of bleeding is, never to have recourse to it without necessity; for the blood is the Life of the Animal; in short, if it were possible to refrain all together, it would be best; for, as *Fernelius* sets it forth, it wasts the Blood and Spirits, decays the Constitution, precipitates those who use it into an untimely old Age, and leaves the Body subject to numerous Infirmities, as Dropsies, Gout, Tremors and Palsies. There is a pernicious Opinion prevailing amongst some People, that the

the first bleeding certainly saves the Patient's Life, upon which foolish Confidence, many People deferring this Remedy to Extremity, have perished.

Bleeding is to be avoided after remarkable *Crises*, whether by Vomiting, Fluxes of the Belly or Urine, Voiding of Blood, Defluxions or Abscesses, because these Evacuations weaken the Patient. Bleeding must be forborn, or at least very rarely used in Dropfical Patients, and those who have *Tremors*, are Persons emaciated and worn out with long Illness. It is not a proper time to bleed immediately after Meals (because this obstructs Digestion, and the Patient vomits up his Meat) nor immediately after any violent Exercise, when the Spirits are spent; nor in decayed Stomachs, where the loss of Blood must infallibly encrease the Deficiency of the Spirits; nor in the first attacks or encrease of a Fever, the Patient being at that time unable to sustain it.

Bleeding is a proper Remedy in the beginning of hot Abscesses, to lessen the Matter which feeds them. It is of wonderful use at first in great Wounds, to anticipate Inflammations, Fevers, Fluxion, and the ill Accidents usually attending them, and for the same Reasons, it is exceeding serviceable in all Fractures and Dislocations of the Bones; but in all these cases it ought to be moderate.

Of the Veins usually opened.

The Arteries are distinguished from the Veins by their Beating, whereas the Veins have no sensible Motion. The Blood in the Arteries, is of a more Lively, Florid, Scarlet colour, more Subtil and Spirituous than that of the Veins; it springs by repeated Jets, which the Venal Blood do's not. The Arteries lie more deeply conceal'd in the Part, and the Veins more shallow and superficial.

The Veins may be opened without any danger, if nothing be hurt besides the Vessels; but the Punction of the Arteries is ever attended with troublesom Accidents, as Aneurisms, Difficulty of stopping the Blood, and Death after, if these Swellings by neglect, or ill management degenerate and gangrene. The pricking of an Artery which lies deep, is still more dangerous, because no Ligature or Restraining Remedies can be applied.

The Vein running through the middle of the Forehead, is called the Frontal Vein, or *Vena preeparans*. Hippocrates directs the opening this Vein in pains of the hinder part of the Head, and at present it is practised in inveterate Pains of

the Part, where-ever they reside. In the same case the Temporal Arteries are sometimes opened : These Arteries alone can be opened, because they are small, and may be compressed with a Boulster and Bandage ; this advantage they receive from running over the Bone, which with the External Applications, compose a double Compress.

The Veins in the greater Angle of the Eye, are opened to prevent their Inflammation ; and the Veins between the Cartilages of the Nose, to take off the Copper Colour, and other Deformities in the Skin of the Face. The opening of the Veins on each side the *Frænum* of the Tongue, commonly called *Vene Ranulares*, is practised in Inflammations of the Throat, and Pains of the Teeth, when the usual Remedies fail. Bleeding in the Jugulars, is very effectual to prevent all Quinsies, Apoplexies, and all stubborn Distempers of the Head, especially Inflammations of the Eyes.

There are four Veins in the Arm, in which it is common to let Blood, the *Cephalick*, *Median*, *Basilick* and *Cubital*. The First is in the upper and external part of the fore-side of the Arm, near the bending of the Elbow. The *Basilick* is a little lower, and the *Cubital* at the bottom of the Arm on the bone of the Cubit, or near it. When the Vessels lie deep, and cannot be opened, there appear on the inner part of the fore-side of the Arm, from the Elbow to the Wrist, several communicating Branches, which convey the Blood from one to the other, and these may be opened in stead of the principal Veins. On the Hand are two Veins, one between the Thumb and forefinger, and another between the last Finger, and the last but one called *Salvatella*, and sometimes opened in *Quartan Agues*.

There are several Veins on the Leg and Foot opened, to give Relief to the Patient. In the upper part of the *Musculi Gemelli*, there is one called *Poplitea*, the opening of which is useful in the Gout, and prevents Varicose Swellings of the Leggs. The *Saphæna* is opened above and below the Internal Ankle. This Vein continues its course on the Foot, quite to the Juncture of the great Toe, and may be opened there : In opening it above the Ankle, great care must be taken not to prick a Nerve, which terminates in that place, and on the Foot not to hurt the Tendons. There is another Vein which winds round the extremity of the same Articulation, called the *Sciatica* ; from the opinion that abundance of Blood drawn out thence, appeases pains of the Hip Gout. The *Saphæna* and *Sciatica*, spread numerous
Branches

Branches on the Foot, which may be opened when the great Trunks do not appear.

The opening of a Vein is done after two several ways; either by Pricking or Cutting. The larger are cut, but the lesser and those which lie deep, admit only of simple Punction; as the Veins of the Nose, where the adjacent parts would be hurt, if the Point of the Lancet were raised. Incisions are made after three several manners, Lengthways, Transverse, or Oblique, and greater or lesser, according to the largeness and depth of the Vessels.

To open the Veins more conveniently; First stop the Re-fluent Blood with a Ligature, except there be a Varicose Swelling, where the Circulation of the Blood being interrupted, the Vessels are tumid enough without any Artificial Help.

In Bleeding Delirious Persons, the Vessels are so exceeding large, and distended by the furious agitation of the Blood, that for the most part there is no occasion for Ligature, the Reason of which is plain from the Laws of Circulation.

The Frontal Vein may be opened lengthways when it is rowling, and Transversely when it is steady. But in whatever manner it be opened, the Lancet must be held inclining, for fear if it were plunged Perpendicularly in, it might hurt the *Pericranium*, and the subjacent Bone.

The Veins and Arteries of the Temples, may be opened in two places, *viz.* on the Temporal Muscles, or under the Lobe of the External Ear, at the entry of the *Meatus Auditorius*. On the Temporal Muscles, these Arteries must be opened lengthways, to prevent dividing their Fibres, which may happen to be followed by a huge Swelling of the Head, *Delirium* and Convulsions. The Fear of such bad Consequences, ought to make a Surgeon who values his Reputation, cautious of hurting these Muscles.

The Vein in the Greater Angle of the Eye, must be opened lengthways, lest a Transverse Section hurt the Tendon of the Oblique Muscle, and cause a Deformity in the Part; but it is much better to forbear meddling with this, for fear of hurting the Lachrymal Gland.

To open the Vein in the Nose, plunge a Lancet directly down, and pretty deep in the extremity of the Nose, between the two Cartilages. This Lancet must be kept in its Scales, by a Tape wrapt round it, and only plunged in without raising its Point: For the Vessel lies so low, that if the
Elevation

Elevation of the point were answerable to the depth of the Punction, the Orifice would be very large, and leave a very unseemly Scar. The Veins on each side the *Frenum* of the Tongue, are opened with a Lancet wrapt round with a little Tape to its point. The Tongue is to be raised with the left Hand, and with the right a small Transverse Incision made, which must not be too deep, for fear of opening the Arteries, which lie very near the Veins. If these happen to be cut, the Flux of Blood will prove difficult to stop, since no Dressing can be applied to the Part. When the Patient has bled enough, let him wash his Mouth with cold *Oxyrate*; if this be not sufficient, apply to the Wound some Restraining Powders of *Terra Sigillata*, *Dragons Blood*, *Vitriol*, or keep a small Compress dipt in *Monf. Lemery's* Styptick Water on it.

To bleed all the Veins of the Head, it is necessary to make a Ligature round the Neck, because the Blood sent to the Head by the Arteries, is conveyed back to the Heart by the Jugulars, and the Ligature causes them to swell. Sharp, strong Lancets are required to open the Veins of the Neck, because the Skin is very lax here, and more difficultly opened than in other parts, where it is more Tense, and the Veins must be opened lengthways, because they are large and unsteady.

In making a Ligature on the Jugulars, the middle of the Fillet is to be applied behind on the Neck, the two ends brought before, turn'd over each other, and put into the Patients Hand, to straiten them as he finds he can bear; or if he by any Accident be disabled, an Assistant must hold them for him till the Work be finished. In Apoplexies and Quinsies, no Ligature can be made without danger of Suffocating the Patient. In stead of this, the Artist must order one of the standers by to keep his Thumb on the bottom of the Vein of the opposite side, in the Cavity of the Clavicle, and press the same side in, which he designs to bleed with one of his own Thumbs, thrusting in the Lancet with his other Hand. The two Veins thus Comprest, Tumefie, and may be well enough opened, without straitning the Windpipe. To stop the Blood, apply to the Wound *Mastich* spread on Rags or Leather. The Reader will find a proper Bandage for bleeding in the Neck, described in the Dressings; because a simple Emplaster often is not sufficient to stop the Blood, when it is in a violent Commotion.

In opening the Veins of the Hands and Feet, the Parts are to be plunged in Water, as hot as the Patient can well endure it. This is done as well to make the Skin tender, as to raise the Veins.

The Veins of the Hands are to be opened lengthways, for fear of hurting the *Tendons which abound there by a Transverse Section*, and the Ligature is to be made above the Part intended for Bleeding. In opening the Veins of the Ham, or *Vena Poplitea*, a Ligature must be made above the Knee; the Orifice must be made Transverse, and proportioned to the largeness of the Vessel.

The Surgeon ought to have an especial care, lest the Patient faint: This happens sometimes in the Operation, and sometimes after. To avoid this Accident at the time of Bleeding, the Surgeon must enquire, if he be commonly subject to faint upon the like occasion; if he has been long fasting; if he do's not find himself inclin'd to go to Stool. If he usually faint in Bleeding, he must be bled lying along in his Bed, take cold Water in his Mouth, be diverted from looking on his Blood, entertained with some agreeable Relation, have Vinegar put to his Nose to smell too, or some Spiritous Liquor, as *Spirit of Wine, Orange-Flower-Water, Queen of Hungary's Water*, or Lastly, take a Spoonful of Wine, or some other Restorative.

It is by no means convenient to bleed any Person immediately after his Stomach is filled with Meat; for the Weakness which the loss of blood causes, is followed by Vomiting, for fear of which Mischief, it is best to stay still Digestion is finished.

The Surgeon must bleed Persons subject to faint, lying down: The same Posture is proper for Persons weakned, and worn out with long Illness. But this is only to be understood of Bleeding in the Hand or Foot; for bleeding in the Head or Neck, necessarily requires the Patient to be a little raised. A stout Robust Man, who is not daunted with bleeding, may be bled sitting in a Chair, or in his Bed, whatever the part be. Bleeding in the Veins of the Hams, and Varicose Swellings, must be done, the Patient standing erect, because then the Vessels rise best.

The Surgeon may Operate in three several Postures, Standing, Sitting, or Kneeling. He must be standing to bleed in the Head, Neck and Arm, sitting to bleed in the Foot, or kneeling if he cannot find a convenient Seat. Lastly, He is often constrained to kneel on the Bed to bleed such

such Patients as are exhausted by long Sickness, and unable to bear the least stirring.

Sometimes when a Surgeon is called to miserable poor People, all Conveniences are wanting, even so much as a Fillet to bind the part; in this case he must make the best shift he can, and accommodate himself to the necessity of the place.

A good Light is of wonderful service to a Surgeon in all Operations, but especially in Bleeding, and the Success of this nice Operation, depends very much on the well managing that. He must never if possible, do it by the light of the Sun; because his own Hand, or the Patients Arm causes a shadow. If the Operation be done by the light of a Candle, though a great Wax Taper give a better light than an ordinary Candle, yet it is never to be made use of; lest if a drop of Wax by any accident should fall, it might scald the Arm, and the Patient draw it back, whereas a drop of Tallow would be scarce sensible, at least create no very troublesome Pain.

If the Person be very Hairy shave the part, especially if it be the Foot or Hand. When hot Water is necessary to bath the part before bleeding, all above the place intended for the Operation must be bathed, especially if the Vessels be large, and lie deep. And to make the Patient able to bear the hot Water, the part must be first plunged in warm Water only, and hotter still gradually pour'd in, till the Patient is no longer able to endure it. If the Veins of the Arms are difficult to find, the whole Limb must be bathed in hot Water. The most convenient Vessel for which purpose, is a long Kettle, such as is used to boil Fish.

The Surgeon ought to have an exquisite Sense at the extremities of his Fingers, and to preserve this, must not use any Laborious or Mechanical Occupation, must not touch any rough Objects, must have a great care of Burns, (all which leave the Skin Thick and Callous,) and Wine and Women, which create Tremors.

The Surgeon must be provided with Ligatures, Lancets, and proper Vessels to receive and measure the Blood. He must have diverse sorts of Fillets, some longer for Persons of better Fashion, and some lesser for ordinary and mean People. He must never use the same to sound Bodies, and those who have any Cutaneous Disease, as the Itch, Small Pox, Meazles, Carbuncles, Malignant or Spotted Fevers, for fear of communicating the Infection.

If the Vessels to be opened lie deep, a long, strait Lancer is the most proper to be used; for if it should be broad, the

the Orifice would be too large. Superficial and rowling Vessels, must be opened with larger Lancets, whose points are firm and stable. Infants require lesser Lancets than Adult Persons.

Surgeons who daily practise bleeding, may receive blood in any sort of Vessels, and guess pretty well at the quantity, at least without being much deceived; but in great Diseases, and Feeble, Weak, Exhausted Subjects, they ought if possible to have Vessels to measure exactly the Blood, as small Porringers of three or four Ounces. It is proper for an Artist to practise the trying, how much two or three of these Porringers hold in any Household Vessel, that in defect of these, he may at any time guess the quantity of Blood emitted.

When the Blood is not received in Porringers, as in bleeding in the Hand or Foot in warm Water, the quantity of blood is guessed, computed by the largeness of the Orifice, the time of its running, and the Tincture it gives to Linen, found either by dipping Rags in it, taking up a little in the Hand, and dropping it on a clean Napkin.

If the Blood be received in any other Vessels besides Porringers, to judge aright of the quantity they must not be too wide, but of a reasonable depth, because these are less apt to impose on the Senses, than more shallow and wide ones, in which the Blood appears of a more Florid Scarlet colour.

Before the Artist proceed to open a Vessel, it is necessary to make a Ligature sufficient to stop the Refluent Blood. In performing his Work, he must alike shun the two Extreams of Boldness and Fear: For on the one Hand, some Timorous Men apprehending they may hurt the Contiguous Parts, do not make a sufficient Orifice, while on the other, some rash Surgeons without Fear or Wit, commit very dangerous Errors.

There are four Particulars in this Operation, the Right placing the Ligature, the well holding the Lancet, the Searching for the most proper place for the Aperture; and lastly, the Artful opening the Vessel.

The Ligature is ever to be made above the intended aperture, except in the Head and Neck, where it is below.

When the Vein lies deep, and difficult to come at, some Surgeons make two opposite Ligatures, or make three turns of the Filler round the Limb, or sow a small Boulster of Linen Cloth, three or four times double, on the middle of the Filler, or place where it is applied, to make a more exact
com-

compression on the Part, and these sort of Ligatures they call *Pontons*. But all these are mistaken Methods, proceeding from ignorance of the Causes. The Ligature with the *Boulster*, fails of the intended effect; because some Vessels being less compressed than others, the Blood ascends by some, whilst it is intercepted in others; and for this Reason, one which equally compresses all, is to be preferred. The third turn is unnecessary, since the first two are sufficient to make any Constriction desired, by binding them straighter, and inconvenient, because when the bleeding is over and this undone, there remain two more to be loos'd. The two opposite Ligatures tend more to hinder, than promote the rising of the Vein. The upper has no other effect in stopping the current of the Blood, after the lower is made, except it be to retain a small proportion of it, in the intervening space between it and the lower; but on the contrary, it puts some stop to the Blood passing through the Channels of the Arteries into the Part, and so lessens the rising of the Veins below the Ligature. So that doubtless the best way of making a Ligature on any part in letting Blood, is by two simple turns of the Fillet, exactly over one another; which may be constringed or relaxed at pleasure, by straightning or loosing the Ends near the Knot, which stays them.

The Ligature must be made at some reasonable distance above the place intended for bleeding; for instance, about the breadth of two Fingers. Thus in bleeding in the Arm, it ought to be placed about two fingers breadth above the Juncture of the Elbow, at the same distance from the Fist and Ancles, in bleeding in the Hand or Foot. At the same distance above the *Rotula* of the Knee, in opening the Veins of the Hamms, and in all bleeding of the Head and Jugulars, in the lowest part of the Neck.

The *Germans* and other Foreign Nations, make use of the *Fleam* in bleeding; but our *Lancets* being more convenient, and this now grown obsolete, I shall omit describing it. But here the Invention of the *Americans* must not be forgot, who to supply the defect of Iron, unknown to them before their Commerce with *Europe*, made *Lancets* of sharpened *Flints* and *Bones*.

The Surgeon in bleeding must open his *Lancet* in such a manner, that it may make a Right Angle with its Scales, excepting in opening the Veins of the Tongue or Nostrils, where the *Lancet* is wrapt round with a Tape in such manner, that both it and its Scales stand in one right Line.

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The way of holding the Lancet is very different, some hold it very long, others short, for my part I prefer the middle way. If it be held too long, it is difficult to direct aright, especially if the Skin be dry and unsteady. On the other hand in holding it too near its Point, there is not room enough for a sufficient Punction in fat Bodies, or such as have their Vessels lying deep. The Lancet is best held between the Thumb and Forefinger, not the Thumb and two Middle-fingers, or Thumb Fore and Middle-finger, as some direct. The three last Fingers serve for a stay to the Hand, to keep it firm and stable, and are to rest a little on the part below, and on one side the Orifice, which is a more commendable way, than Bully-like, to run the Lancet into the Vessel, without regard to Security. The Aperture is to be made in the place which represents it self fairest, except some Neighbouring Artery, Tendon, or Membrane forbid.

The Operation in opening a Vessel, consists of three parts ; Punction, Incision, and raising the Point of the Lancet. All these are to be so promptly done, that to the Spectator they may appear but one Action. The Surgeon ought to be provided with all Necessaries, and to have at least two Assistants by him if possible, one to hold the Candle, (when necessary) and Porringer, and the other to do him any Service occasion shall require.

In Bleeding in the Arm, after the Patient is put in a good Posture, and the Bed covered with Linen to receive the Blood, which springs out at first something imperuously, and (without this Care to prevent it) would be apt to stain the Bed-cloths. The next thing is to tuck up and fasten the Patient's Sleeve, and cover it with a Napkin, for fear any Blood may happen to be spilt upon it. These little Precautions, though not very Material to the thing it self, yet are apt to beget a favourable Opinion of the Artist in the Mind of the Patient, who from observing these minute Circumstances of his proceeding, is apt to conclude him careful and dextrous.

When this previous Business is done, the Surgeon must feel the inside of the Arm in all places where the Veins appear, to discover where the Artery lies. This is discerned by the Pulse or Beating, which is not sensible after the Ligature is made; and therefore it is to be found before. The Ligature, as I noted before, is to be placed two Fingers breadth or something more, above the Flexure of the Elbow, to pass
twice

twice round the Arm, and be tyed with a Bow-knot on its out side. The first round must not be altogether so strait as the second, and the Skin not forcibly extended, by drawing it up or down, lest upon relaxing a little the Ligature, to give way to the Blood issuing out, the Orifice close and obstruct the Passage.

After the Ligature is made, some little time must be allowed for the Veins to swell, during which the Surgeon may open his Lancer, put it in his Mouth, take again the Patients Arm in his Hand, and (making several Frictions, drive up the Blood towards the place intended for the Incision;) feel the Vessels with his Fingers, and chuse out some place for the Aperture, which answers best. This answering is a gentle Resistance, which yields to a moderate Compression, and resists the Finger, if the Compression be very slight. But observe here, this answering of the Vein may be very deceitful, especially in the middle of the Flexure of the Arm, when numerous Scars have made a sort of small *Sinus*, which may impose on the sense, and appear like a Vein on the Surface, when the real Vein lies much deeper.

After a long while feeling too and fro, if no Vein appear which can be opened with any tolerable Security, Frictions with hot Cloths are to be used, and continued for a considerable time. Or the Ligature taken off, and the Arm plunged in hot Water bound up again, and Frictions us'd as before. If after all these ways tryed, no Vessel appear capable of being opened, it is more advisable to desist, than bleed at all Adventures, as some rashly do on the Scars of old Orifices. This Practice is occasioned by the hopes of finding the same Vessels, which is a mistake, since the Veins change their Situation under the Skin, according to the Age or good Case of the Body; nay, some Vessels are so lessened by frequent Bleeding, they at length become scarce sensible.

If after a careful Tryal, the Surgeon comes to discover a Vessel which lies deep, he must assure himself well of the Place by several feelings, and rub the part with a little Oyl to supple it, and facilitate the entring of the Lancer, especially if the Skin be dry, rough and scurfy: Lastly, to secure the place of the Vein, he must make an impression with his Nail, which may serve to guide him.

After the Artist has observed these Circumstances, grasping the Patients Arm in one Hand, he must take the Lancer
cet

set in the other, and holding its Blade firmly in the middle, between his Forefinger and Thumb (staying his three remaining Fingers on the Patients Arm) thrust it in precisely in the lowest part of the Impression made with his Nail, and cutting a little Tranversely, raise up its Point to cut through the Vessel and Teguments, and widen the Orifice. If he suspect the Lancet to be plunged in too deep, he may draw it a little back, before he brings up its point. Cutting Transversely is the surest way not to miss the Vessel, and large Orifices are to be preferred to small ones, for the free emission of the Blood. The largeness of the Orifice is more necessary in Vessels which lie deep, because the Flesh and Fat is apt to choak the passage, and hinder the Evacuation. Add to this in the last place, that small Orifices are apt to leave *Thrombuses* behind them.

In Bleeding in the Arm, the Surgeon must feel all over it with his Forefinger for the Artery, which commonly lies under the Basilick Vein. I observed before, that this Search is necessary before the Ligature be made, because after it the Veins are Tumefied, and the Pulsation is not sensible. The next Search is after the Tendons, which are discovered in bending the Arm by their Rigidity. When the place of the Artery and Tendon is certainly known, the Ligature is made two Fingers breadth above the Bending of the Elbow, and place of the intended Orifice. The middle of the Fillet is to be applyed on the Arm, and passing twice round it, to be tyed behind: The knot is best placed above the Joynt, lest if it be below it incommode that Hand which holds the Patients Arm; The Ligature must not be so strait, as to compress the Arteries which import Blood into the part; it is enough if it be sufficient to stop the Reflux of the Blood in the Veins.

In Bleeding in the Right Hand, the Surgeon must take the Patients Arm in his Left Hand, and prick him with his Right; and on the contrary, in the Left he must take it in the Right, and bleed him with his Left. Before the Operation, it is necessary to consider well which Vessel is fairest, that is largest, and which has least danger in it; for in case the Artery adhere to it, it is better to prick the lesser, than run any hazard in the greater. The Cephalick is the most secure of all the Veins of the Arm, having no Artery or Tendon accompanying it, and yet Surgeons are not very willing to bleed in it; because the Skin, on the upper side

of the Arm is pretty thick, and the Blood do's only flow down the Arm without springing, which do's not so well please the Patient, who when the Blood springs out, thinks the Operation better performed, and is fond to have it thought he has a great deal of Vigour. If the Vessel lies deep, and is not Visible, which often happens in the thick Arms of some Women, in order to find it, he must grasp the Arm in one Hand, compressing the place where the Vessels ought to appear with his Thumb, and with the other Hand make several Frictions upwards, pressing the Vessels all along to see if he can discover any Blood strike against his Thumb. When he finds any Vessel under his Thumb, he must take it instantly off, marking the place with his Nail, and then prick a little below the impression.

The Punction is made with the Lancet, either with or without raising the Point. In the first way the Surgeon takes the Lancet between the Thumb and Fore-finger, meeting even (not too long, because it would not be steady, nor too short, because it would be troublesome;) and then resting his three other Fingers on the Patient's Arm, plunges his Lancet into the Vessel, a little on one side, and when he is in raises its Point, and so cuts through it. This is the best Method of Operating, when there are no Reasons against it, but it is the most Painful.

In bleeding without raising the Point, the Lancet is held in the same manner as before, plunged directly into the Vessel a little beneath, and so brought forward without turning up its Point; This way is less painful than the former, but in some Cases is not without Danger. If the Tendon or Artery lie directly under the Vein, this last Method is never to be used, because it requires deeper Punction, and there is great Danger of hurting one of them; On the contrary, if either lie on the side, there is ground to fear they may be cut by raising the point. But observe whichsoever of these ways be practised, the Lancet must be held something inclining, and not too Perpendicularly over the Vein, least entering in this Manner, it prick the Membrane of the Muscles, from whence great Pain and Inflammation would ensue.

In Veins running over great Muscles, the Puncture is made obliquely upwards; for in pricking directly down, it is scarce possible to avoid hurting the Membranes, which invest the Subjacent Muscle, which will be attended with Pain and Inflammation.

If one Vessel only appear fair, and that be accompanied with a Tendon or Artery, the best way is to trace it thro' its whole Progress, till it leaves them, and where it appears alone, there make the Puncture. This is the way of Bleeding in the Arm. The Dressing I shall describe below, in its proper place.

For Bleeding in the Leg, the Part is to be kept in warm Water to the mid Leg. This is done to bring the Blood more copiously into it, and soften the Skin which is very thick in that place. When the Part is well heated, the Artift searches for the Vessel above or below the Ankle, makes a Ligature about two or three Fingers breadth above it, ties it streight enough to compress the Vein without pressing the Artery, puts the Foot again into hot Water, to give the Vein time to Swell. Then (the Patient sitting on the side of his Bed, and he in a Chair before him) he lays the Foot on his Knee, grasping it in one Hand, and Bleeding with the other. In Bleeding in the Right Foot, the Lancet is to be held in the Left Hand, and on the contrary in the Right in Bleeding in the Left, according to the Rules before prescribed.

The most convenient place for pricking is below the Ankle. There is no Artery, Nerve, or Tendon to fear there. The Part is carnous, and there is room enough to plunge the Lancet without pricking the *Periosteum*; But above the Ankle there is little Flesh, and there is great danger of pricking that Membrane, or some Nerve dispensed to the Part; the ill Consequence of which, would be violent Inflammation and Pain. On the side of the Ankle there are diverse Tendons, which ought to make the Surgeon cautious: When the Vessels on the Internal Ankle are not fair, they appear for the most part fair on the Foot, but I would not advise bleeding here, upon account of the numerous Tendons which are in great Danger of being pricked, but if it be necessary, he must enter very obliquely.

For Bleeding in the Jugulars, a Constriction must be made with a Handkerchief, sufficient to make the Vessels rise, and the Orifice be made lengthways of the Vessel, in its middle.

In all Bleeding this may be accounted a General Rule. If the Vessel be very large, the Aperture is to be made in its middle lengthways; If of a middle size, as in the Arm, a little on one side, and something obliquely from above downwards; If very small, as in Infants, then it is to be cut Transversly.

It is a general Rule likewise, That in whatever Veins of the Head the Evacuation be made, the Ligature must ever be about the Neck. In Distempers of the Head, the great Vein in the midst of the Fore-head, and the Veins under the Tongue are often opened, but doubtless the Jugulars are best in most of these Cases, to make the most prompt and copious Evacuation.

In Bleeding under the Tongue after the Ligature made, it is raised, held against the Palate, and then the Vein opened, and the Blood stopped with a good Restricting Gargarism, if it do not cease of it self.

Arteries are opened in the same manner as Veins, but these are never to be pricked, unless where they immediately pass over some Bone, which no other Arteries in the Body do, except those of the Head; the Principal of which for this Operation, is the Temporal. Dr. Willis pretends, Arteries are opened more Successfully than Veins, in Obstructions and Inflammations, as for instance of the Eyes, because they contract and retire within the Flesh, are Cicatrized there, and cease from their Office of conveying Blood to the Part.

After Incision made, when the Impetuosity of the Blood begins to abate, the Ligature must be a little relaxed; that as much Blood may pass into the Part by the Arteries, as will suffice for the intended Evacuation. Farther for promoting the Discharge, some little round thing as a Lancet-case, or the like, is to be put into the Patients Hand, to turn about with the extremity of his Fingers only; This Action causes a Contraction of the Muscles of the Arm, viz. the *Sublimis* and *Profundus*, which are Flexors of the Fingers, and by this means they express the Blood in the Vessels running on their inside, and accelerate its Motion towards the Orifice. In Bleeding in the Throat, the same thing is effected by gently moving the lower Jaw, and in the Foot, by stirring the Great Toe. All the time the Blood is running, the Surgeon must hold the Patients Arm with one Hand, in which there is a double Convenience; First, the easing and supporting the Part, which is heavy by the great quantity of Blood and Spirits stopt in it: And Secondly, the advantage of bending and extending it as occasion shall require. With his other Hand he may distend the Skin, drawing it upwards, downwards, or on one side, to make the outward Orifice answer to that Vein.

When the intended quantity of Blood is drawn out, the Arm must be unbound, and the Surgeon with his Finger must

must press around the Orifice, lest any Blood happen to Stagnate under the Skin. The Wound must be exactly stopped by closing it on both sides with the Forefinger and Middle Finger; but if the Fat come out, this must first be put back by a Compress in one Hand, with the other Hand pinching together the Lips of the Wound, between the Thumb and Forefinger.

While the Surgeon is busied in stopping the Orifice, the Servant who held the Porringer which received the Blood, must set it down on the Table gently, and strike it over with a Feather, or some other light thing to take off the Froth. This Trifling Circumstance has its use, to discover the true Colour of the Blood, and amuse the People who most commonly are admirers of such Mysterious Matters.

THE DRESSING. This consists only in applying a little, thick, square Compress on the Orifice, and keeping it on by binding up the Arm. Before this be laid on, the Surgeon must clear the Wound from Coagulated Blood, which if neglected, will hinder Coalition: Then keeping the Lips of the Orifice together with his Fingers, he must speedily apply the Compress, staying it on with his fore and middle Finger. If any little Flatulent Tumour appear on the Orifice, which is not uncommon when it is too small, the Compress dipt in cold Water disperses it. For binding up the Arm, he must take a Fillet of about an Ell long, and an Inch and a half broad, and gathering into his Hand three or four Inches of one end of it, and (laying the Thumb, fore and middle Finger of his Left Hand, in bleeding in the Right Arm, or the Thumb and the same Fingers of his Right in bleeding in the Left Arm, on it) apply that part which he holds between his Fingers, on the Orifice, and so make several Crosses over the bending of the Elbow; and Lastly, when the Fillet is spent, bringing back that end which he held in his Hand, he must tie both ends behind the Arm. Some place the Knot behind the Arm, above the bending of the Elbow, and others below. If the Fillet be of a firm and strong Cloth, and there be no reason to fear the Patient will make use of his Arm, the Knot is best placed above; on the contrary, if the Cloth be weak and much worn, below, for fear when the Patient shall come to open his Arm, the Fillet break. In the last place, observe the Fillet must never be rolled.

A Compleat Body

For Bleeding in the Foot.

The Artift must bring together the sides of the Orifice, cleanse the Wound of Blood, lay a small, thick, square Compress on it, and keep this on with a Fillet of an Ell and half long, and an Inch and half broad, rolled at one end. To apply, he must lay a good length of the Fillet on his Knee, and place the Patients Heel on it, then with the other end he must make a Circular Turn on the Compress, and an X on the Foot; After divers Circumvolutions, he must bring the Fillet obliquely over that end which is under the Heel, and then bringing this back, form a sort of Stirrup from the resemblance to which, this Bandage takes its Name.

For Bleeding in the Fore-Head,

The small Compress applyed on the Orifice, is kept on by the Handkerchief folded cross, or Diagonalwise, in the form of a Triangle: The Artift takes the Handkerchief thus folded in both Hands, with his Thumbs above, and Fingers below, and in this manner applies its Middle directly over the Wound, then slides his Hands on the Handkerchief thus placed behind the Head, and brings both ends as far forward as they reach, and pins them at the end; In placing the Handkerchief, care must be taken to avoid Wrinkles as much as possible.

There is another Bandage used in Bleeding in the Fore-head, called the *Discrimen*. In this the Compress is kept on by a Roller or Fillet of an Inch and an half broad, and three Ells in length, rolled at one end. The Method of making which is thus. The Artift applies one end of the Roller to the Top of the Nose, and measures a length from thence to the Nape of the Neck. This he lets hang down over the Face, then he passes the Fillet along the Sagittal Suture, brings it to the Nape of the Neck, and back over the Parietal Bone on one side, over the Parietal Bone on the other; then lifts up the end of the Fillet over the Face, lays it over the Sagittal Suture, leaving it to hang behind, then returning to the other end, brings it over this depending part, engages it under it, so continuing his Circular Turns round the Parietal Bones till the Fillet is spent, and then pins it at its ends.

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There is a third Bandage for bleeding in the Forehead, called the *Scapha*, from its resembling a little Boat, and is thus made; The Artist takes a Fillet or Roller of an Inch and half broad, and three Ells in length, rolled up at one end. After a small Compress laid on, he applies the Fillet obliquely on it, lets fall about a Foot in length, and with the other end passes over the Parietal Bone, behind on the Nape of the Neck, over the other Parietal Bone, and so over the Wound; then he takes up the end hanging before, lays it over the Head, leaving it depending behind, then returns to the end of the Fillet which he left, continues his Circular rounds (over the Parietal Bone, the Wound, the Parietal Bone on the other side, behind the Nape of the Neck) and pins it at the End.

There remains still a fourth Bandage for the Forehead, which is called the Royal Bandage. To make this, the Artist takes a Roller of an Inch and half broad, and three Ells in length, rolled at one end, as in the two former, there he Measures twice the length or distance from the top of the Nose, to the Nape of the Neck, this he leaves hanging down before on the Face from the Compress, and with the other or Rolled end, he proceeds over the Sagittal Suture, descends behind the Head, returns before, passes under the Chin, then reascending on the Cheek, passes near the lesser Angle of the Eye, then over the Head, descends behind, returns before, passes under the Chin, reascends on the opposite side on the Cheek, passes as in the former very near the lesser Angle of the Eye, and so continuing upwards passes over the first turn on the top of the Head, and makes a cross with it Salterwise. Then he delivers the Roller to an Assistant to hold, whilst himself makes three Pleats, each gradually longer than other, in that end of the Roller which hung over the Patients Face, and lays the remaining part over the Sagittal Suture, leaving it to hang behind his Head. When this is done, he returns to the Rolled end of the Fillet, and makes several Circular Turns round the Head (passing over the Fore-Head and Parietal Bones) and in the last place pins the end of the Roller.

A Bandage for the end of the Nose.

The Ancients bled at the extremity of the Nose, between the bifurcation of the Cartilage, being extremely careful not to cut it. This Bleeding is very ridiculous, since there

A Compleat Body

are so many places more commodious for this purpose ; but those who practise it, use the Bandage called the *Discrimen*, with this difference, that here they begin to apply the Bandage on the Nose, whereas in the former case they began on the Forehead.

A Bandage for the Temporal Artery.

In bleeding in the Temporal Artery, a Compress dipt in some Stryck Water is applyed on the Orifice, and the Bandage called the *Discrimen* made, which is the same used in opening the Frontal Vein ; but with this difference, it is first applyed in this last Case on the Temples, as in the former on the Forehead,

A General Bandage.

The following Bandage is adapted to bleeding in the Forehead, Neck, or Temporal Artery. The Artist takes a Filler of three Inches in breadth, and an Ell long, this he doubles in the midst, and slits it lengthways with a pair of Scissars, leaving about three Inches square in the midst plain and undivided. When it is thus divided, it is called the Filler or Roller, with four Tails. He applies the plain undivided part on the Orifice, brings the two upper Tails downwards, and the two lower Tails upwards, continuing them each respectively, circularly over the other, and pinning them at their Ends. The Reader may observe here as a general Rule, in applying these divided Rollers ; That the two lower Tails must ever ascend, pass over the upper, and be fastned above, and the two upper must descend cross with the lower, and be fastned below.

These slit Rollers are exceedingly useful, and adapted to keep Applications on all parts of the Head, except in the Operation of the Trepan, where the Great Cap is in use, which shall be described in its proper place.

A Bandage for the Jugulars.

The Artist takes a Filler of half an Ell long, applies the middle of it on the top of the Head, and leaves the two ends hanging on each side of the Neck ; then he takes another Filler of a competent length, and near three Inches broad,

broad, rolled at one end, with this he makes several circular Turns over the Compress, as far as the Fillet reaches, and then pins it where it ends ; Next he takes up the two ends hanging on the sides of the Neck, and fastens them on the Head, these are very serviceable to suspend the Fillet rolled about the Neck. This is called the Contentive Bandage of the Neck. There are some Cases which will not admit of any Bandage on the Jugulars, and here it is necessary to lay some Glutinating Emplaster on the Orifice.

THE CURE. After the Bleeding is over, the Patient may lie down and drink off a Glass of Water, which mixing with the Blood dilutes and cools it. The Patient is suffer'd to rest for the space of an Hour, and after takes some Restorative Draught. It is customary to forbid the Patient sleeping, till he has taken this ; but I profess I am a stranger to the Reason of this Practice, for in sleeping immediately after Bleeding, Transpiration is free ; and there arises a certain Dew on the Surface of the Body, which is very refreshing. Besides this is the most gentle, easie, and agreeable Slumber that can be imagined, Nature requires it, and seems to have Violence done her, when this Satisfaction is denied her. However since Custom prevails to the contrary, and perhaps some Accidents may have attended sleeping at this time, I would not advise any Person to recede from the common and received Practice.

If the Physician has directed the Patient to be twice bled on the same Day, the Surgeon may put some Oyl or Grease on the Orifice, to prevent its closing, and by this means save the trouble of making a second Puncture. The lesser Dressing is not commonly taken off under twenty four Hours, or a longer time, if the Orifice be not disposed to heal. For when the Limb is too soon unbound, the Wound is but half clos'd, the Air insinuates into it, creates a little running Ulcer, which is difficultly healed, and molests the Patient exceedingly. The Dressing is left on much longer after opening an Artery, than a Vein ; because the Blood being projected with great *Impetus*, would forcibly open the Orifice, before the Coalition be perfected. When the Compress is to be taken off, if it adhere to the Orifice, it is better to leave it on, or Humect it with a little warm Wine, and so gently separate it, than remove it by Violence.

If the Patient fall into a Swoon during the Operation, the Surgeon must cause him to be carryed to his Bed, if he be not already in it, fling a little cold Water in his Face, or give him some to drink, must open the Chamber Windows, and draw the Currains, if the Disease and Season of the Year permit. He must apply to his Nose some Odoriferous things, as good Vinegar, Queen of Hungary's Water, Spirit of Wine, must call him frequently by his Name in his Ear, with as loud a Noise as possible, and unloose whatever is tyed about any part of his Body. When the Patient is come to himself, the Artist must place the Limb in a convenient Posture, which is as various as the parts concerned. For instance, after Bleeding in the Head, the Patient must remain quiet, and have his Head supported with some soft Pillow, and lie a little inclining rather than erect: After bleeding in the Arm, the Patient must avoid all stirring, reposing on his Bed, or some convenient Couch, with his Arm suspended in a middle Posture, between Bent and Extended: After Bleeding in the lower Parts, he must keep his Bed for the space of twenty four Hours, to prevent any Fluxion or Suppuration on the place.

Most Persons after Bleeding, are in some Disorder, in which I would recommend boldly drinking a large Draught of Water, as a proper means to recall the Blood and Spirits determined, by opening the Vein towards the extreame parts, besides Water mixing with the Blood, allays its Heat. The grand Objection against sleeping after Bleeding, is that Nature is always offended by two præcipitate a Change from one Extreme to another; That it must unavoidably be injurious, to put the Blood into two such contrary Motions at once, as in Bleeding and Sleeping; in the First of which it is brought from the Center to the Circumference, and in the latter, from the Circumference to the Center of the Body. The Second Objection is, That this concentration of the Blood in the time of Sleeping, frustrates the effect of the Evacuation, which is the Principal Intention of Bleeding. Others without assigning so many ridiculous Reasons, only pretend if the Patient be permitted to sleep, there is danger by some Motion of it, the Bandage of the Arm may be loosned, and others are so positive, as to affirm they have found Persons sleeping after Bleeding actually dead. For my part, none of these Reasons prevail with me, or hinder my believing, sleep after bleeding very wholsom, nothing cooling the Body more effectually, (which is one of the
principal

principal ends of Bleeding) or calming the Blood more, after the disorder it is put into by the Evacuation. Bleeding is a proper Remedy in want of sleep; and after Bleeding, most Men find a greater desire of sleeping, than at any other time, without any inconvenience attending it. As for the danger of losing Blood in such Persons as have unquiet and disturbed Sleeps, they may be well enough secured by a close, well-made, double Bandage, or by placing some Servant by the Patient, to observe all his Motions.

It is commendable, to refrain from eating immediately after Bleeding, or till such time as the Blood and Spirits have resumed their ordinary Course, which is a little irregular at that time; because all the Fermentations conducing to Digestion, operate better in their Natural State; than when they are put in any commotion. The ordinary time of eating after Bleeding, is the space of an Hour, except the Patient be very weak, in which case he may take some Restoratives immediately, as a little Wine, or some other Spirituous Liquors. The Nourishment after Bleeding ought to be light, and easy of Digestion, as some good Strengthening Broath.

The Porringers must be set in some place where there is no Smoak, Wind, or Dust, or where the Rays of the Sun do not beat, because all these Accidents change the Surface of the Blood, and hinder the right judging of it. Vessels of Silver, Pewter or Glass, are more proper to keep the Blood in, than Brass or Copper. The Vessels must be washed, and wiped clean, because a little Moisture remaining, imparts to the Blood a more florid Vermillion Colour.

Observations on the Blood in Porringers.

Since most Patients are Sollicitous about the State of their Health, they are generally inquisitive concerning their Blood, and frequently asking the Surgeons Opinion of its Colour, Consistence and Taste.

The Blood is a Heterogeneous Liquor, compos'd of a Multitude of Particles, supplying proper Materials for the Reparation of the Body, which is in a constant Consumption. The differing Particles, have each a different Configuration, and Disposition of Surface, which make a various Reflection of the Light. Now that visible appearance called Colour, being nothing else but the Impression

sion which the Rays of Light returned after a various manner make on the bottom of the Eye, it is consequently true, the least alteration in the Disposition of the parts of a Body, must produce an Alteration in its Colour. This being admitted, no reasonable Man will deny the Colour of the Blood in a State of Health, to be the undoubted Standard, and all others to be judg'd better or worse, as they approach to, or recede from it; and those Colours allowed to shew the most Vitious Disposition of the Blood, which are most distant from the Natural.

Blood then is pronounced good, and of a Natural Colour, when it is Florid and Vermilion, which Colour it acquires in passing through the Lungs, as Dr. Lower by several Experiments has Demonstrated. Whoever observes, that the Blood drawn out of the *Vena Cava*, before it enters the Right Ventricle of the Heart, and that drawn out of the Pulmonary Artery, is of a dark, brown, Red; and on the contrary, that drawn out of the Pulmonary Vein is of a bright Red, and that drawn out of the Artery of no better a Colour, after having past through the left Ventricle, must necessarily conclude this effect proceeds from the Nitre, diffus'd through the Mass of Air, which is incessantly drawn into the Lungs in Respiration, and so communicates its bright and lively Tincture. This Operation is still farther confirmed by the following Experiment. If Blood stands for some time in a Porringer, the Surface will be of a Florid Colour, but the bottom of a dark Red; but if the *Coagulum* be inverted, and the lower side for some time exposed to the Air, it becomes of as bright a Red, as its Surface before was. Which effect, undoubtedly proceeds from the Saline parts of the Air, which insinuate themselves, change the Disposition of the Parts of the Blood, and so cause them to reflect the Rays of Light, after a different manner.

There is ground to pronounce the Blood bad, if it appear Blue, Whitish, Yellowish, or of very different Colours at once. The Ancient Physicians pretended from the Colour of the Blood, to determine which of the four Humours, Choler, Phlegm, Melancholy, or Blood taken in a strict Sence (which they thought to be the Ingredients of the Mass) were predominant. Chymical Physicians derive the various Colours of the Mass of Blood from the several Exaltations of the Active or Passive Principles, which they believe to exist in the Blood. They ascribe the Sound and Healthy State of the Blood, and its laudable Colour, to the equal Mixture of its
Spirits,

Spirits, Salt, Sulphur, Water and Earth, and its Depravation to the effort in these Principles, to disengage and separate themselves from each other.

It is a Problem among the Learned, why the Blood in Malignant Fevers, should appear of so fine a Colour. This noble Colour is reputed an ill Sign; because (say some Authors) the corrupted Blood is destitute of Spirits, moves with difficulty through the Arteries next the Heart, and scarcely arrives at the Extreme Parts of the Body.

If it be askt whether a Florid Vermillion Blood be always good, the Answer ought to be, this depends very much on the Colour, Orifice of the Vein, the Manner of its issuing out, and the Vessel which receives it. An Orifice too great or too small, are both faults in Bleeding, and make the Blood appear different from what it would be, if the Orifice were proportioned to the Vessel. If it be too little, the Blood spins out in a thin Thread, and is a long time in discharging it self, and its Particles are much more changed by the Air, than when it comes forth in a larger Stream, and less Time: On the contrary, if the Aperture of the Vessel be large, instead of springing out, it runs down the Arm, and the Surface is larger, which likewise gives room for the Air to act on it, and create a lively red Colour. Again, if the Aperture of the Vessel be too great or too small, and by this means the Blood must cake and coagulate too soon, and the different parts have no time to separate, and rise to the Surface which appears Red, from the impresson of the Nitre of the Air, which gives it a disposition proper to excite such a lively Sensation in our Eye.

The Vessel which receives it, contributes very much to the Colour, for if it be wide and shallow, it appears of a brighter Red, than if the Vessel be deep and narrow; in the first it soon coagulates and cools, and leaves a greater Surface exposed to be impregnated with the Aerial Nitre, the contrary happens, when it is received in narrow and deep Vessels, in which it preserves its Motion and Heat for a longer time, which gives its Parts liberty to separate, and rise towards the Surface, where they shew their proper Colour. If the Blood be much stirred, the Air acts on more of its Parts, and it cools soon, which makes it appear more red. Lastly, if the Porringer or Vessel which receives the Blood, have any Water left in it, with which it was washed, it cools soon, and its Motion ceasing, there is not time for the
diversity

diversity of its parts to separate, and rise to the Top, for which reason its Colour is finer.' From these considerations it appears evidently enough, the Florid Red is not a certain sign of good Blood, since this Beautiful Colour may be the effect of the different manner of letting out, or receiving this Noble Liquor. On the other Hand, the same Colour is not a sufficient Reason to condemn the Operation, as ill performed; since the Blood ought to appear good in a State of Health, or Slight Indisposition, where there is no Distemper sufficient to communicate an ill Colour to the Mass. In Persons reduced to extreme Weakness, or after long Abstinence, or when the fear of Bleeding, and the Terror upon sight of the Blood creates a depression of the Spirits, in these Cases the Blood is of a Beautiful Colour, because the Spirits wanting force to project it to a distance, the Air has more power over it to impregnate it with its Salts; And for the same Reason, it ever has a Beautiful Colour in Malignant Fevers. On the other Hand, the bad Colour of the Blood is not always an Argument, the Operation is well performed; because in some Bodies the Blood is so corrupt, that it will appear bad, notwithstanding it be ill let out, or ill received; In fine, a Right Judgment can only be performed from the duely comparing all Circumstances before-mentioned.

Great Regard is to be had to the Consistence of the Blood when it is cold, and has stood for some time in the Vessel, and Observations of this kind will inform us, of its good or ill Condition. If the Blood preserves its Liquidity after it is perfectly cold, it do's plainly discover its corruption, and the entire separation of its Principles; on the contrary, if the Blood Coagulates soon, it is a Mark of its Thickness, and a Deficiency of Spirits: For which reason it is deprived of its necessary Motion in the Vessels. The due consistence of cold Blood, is such as may preserve a Moderate Union of its parts.

The Blood has rarely any Scent, unless it be entirely corrupted, its parts separated, or it Stagnates in the Veins, and wants Agitation, as in Leprous Persons, or is vitiated by the Remains of an Old Pox, in which cases it sometimes has an ill smell. Where the Blood is thus Tainted, the Patient cannot expect long Life. But in this place I think it pertinent, to give the Surgeon this necessary notice, That however the Blood may be free from any ill smell, it is very dangerous to draw in its Steams in Respiration; and constant Expe-
rience

rience shews us, that Surgeons in Hospitals who bleed often, are more frequently attacked with Malignant Fevers, than those who dress Ulcers which exhale the most foetid smell. From which Observation it evidently follows, that in Breathing through the Mouth or Nose the Poyson is received, which after circulates with the Blood, and infects the whole Mass. To tast the Blood is both dangerous and disgusting, and therefore very little information can be gained from this Head of its good or ill qualities; However the sweet Tast is reputed best, and any other as Salt, Bitter, or Acid, condemn'd as a Mark of its Depravation.

To conclude this Subject, those who pretend to know the Patients Distemper by his Blood, are Impostors; there is indeed sufficient ground to pronounce a Man to be indisposed when the Blood has a bad appearance, but to assign the Disease and its Nature, is an impossible Matter.

Of Accidents happening after Bleeding.

Bleeding is the most Trivial, the least Gainful, and yet most dangerous Operation, which an Artist is ever employed in. If well performed, no Reputation is gained by it, if any Accident happen after it, it is sufficient to ruin his Honour by the Slanders of the ignorant Multitude, who never regard what they talk, and the Envy of his Fellow-Surgeons who are ever busie in defaming one another. A young Surgeon therefore in point of Prudence ought to be well instructed in the Accidents which happen after Bleeding, and as well versed in the Method of curing them, to prevent having recourse to his Treacherous Friends.

The Principal Accidents in Bleeding are these which follow. In the first place it sometimes happens the Vein is not prick'd at all, or at least very ill opened, and the Blood comes out with difficulty. The misting of a Vein proceeds either from its unsteadiness when it is not fixed enough under the Skin, to abide the Lancet, or from some extraordinary Concern and Apprehension in the Artist, who when it lies deep is afraid of having some Membrane, Nerve, Tendon, Artery, or other dangerous part, or lastly, some Deception of the sense, when he believes he feels a Vein in a place where there is none. A Vein is said to be ill opened, when the Incision is either too High, or too Low, or when the Surgeon do's not keep a rolling Vein steady, for in this case the Vein slipping under the Skin, the outward Orifice does not answer to the inward, and the Blood is stop'd. A Vein is likewise re-

puted

puted to be ill opened, if the Orifice be too small; but whether this be a fault or not, is not yet decided, and it remains a controverſie amongſt the Learned, whether a ſmall or a large Orifice be beſt. I ſhall not pretend to determine this point, only here it concerns the young Artiſt to obſerve, that if the Orifice be too large the Blood will not ſpring out and make an Arch, and the Patient by conſequence will never be well contented.

If the Surgeon fail in his firſt attempt to open the Vein, becauſe it ſlies from his Lancet; He muſt ſubject it again directly on the Inciſion firſt made, and endeavour to prick it in the ſame Orifice, or if he like not that, in ſome other place above or below, or in any other Vein which preſents it ſelf fairer; but whatever he do's, he muſt be ſure to have a preſence of Mind, without diſcovering the leaſt Fear or Surprize, and not like ſome timorous Men appear out of Countenance upon miſſing Bleeding, which alarms the Patient and Standers by, and makes them think this, which is a very ſlight or no fault at all, a very great one. If the Surgeon miſſes the Vein, and do's not make his Inciſion deep enough, he may plunge his Lancet deeper in the ſame Vein, or make attempt to open it in another place, with better Succeſs. I think it better to do this in a new place, than to prick again in the ſame, and this is leſs apt to diſguſt the Patient, who feels a Pain ſtill remaining in the firſt Puncture. If the Surgeon be deceived in feeling, he ought to examine the Patients Arm with greater exactneſs, to diſcover the place where the Vein lies, and if after feeling and ſearching for a conſiderable time, he cannot find any greater certainty than at firſt, it is better to defer Bleeding till the Evening or the next Morning; becauſe the poſition of the Veins may ſhift in that time, and all who have any Experience in this matter, know very well they are ſometimes obliged to quit their work, and yet ſometime after Bleed in the ſame place, with the greateſt eaſe imaginable. If a Vein be ill opened, and the Blood comes ſo badly from it that the Patient cannot hope to be relieved by it, the Surgeon muſt Bleed in the other Arm, or defer the Operation, if the Nature of the Diſtemper require it to be done in the ſame, eſpecially if the Vein lies deep, becauſe theſe once beginning to evacuate, never riſe after, not to mention the Blood running down, which blinds the Operator. If the Inciſion be too ſmall, the Operation ought to be deferred till next Day, or at leaſt the Patient ought to Bleed on the other ſide. If the Orifice be

too large, and the Patients disposition be slight, the Surgeon may permit the Blood to run down the Arm, but if the Disease be violent, and the Physician pretend to judge of that by inspecting the Blood, he must streighten it a little, the better to give the Blood its Natural Colour.

Sometimes there happens to be a small Collection of Blood under the Skin, which forms a *Thrombus*, and after a little Inflammation and Pain, ends in a slight Suppuration. The same consequence sometimes happens upon a Lancer not being sharp enough, for this makes a sort of Contusion, and the edges of the Wound do not easily unite to each other. The extention of the Arm or other Motion of the Patient after Bleeding, sometimes impedes the Coalition, and some little quantity of Blood getting between the Lips of the Orifice, forms a small Ulcer which proves troublesome to the Patient for some time. The Method of preventing these inconveniences, is first applying mild Digestive Medicines, and after them Desiccatives; for instance, using a warm Liniment with *Oyl of Roses and Vinegar*, laying a little *Basilicon* on the Orifice, and over that *Galen's Cerate*, or Rags several times doubled dipt in *Oxycrate* a little heated, and after the Inflammation is over, and the Suppuration compleated, a small Emplaster of burnt *Ceruse*, *Diapalma*, and *de Minio* to dry the Ulcer, and confirm the *Cicatrix*. Sometimes there is an Appearance of a Contusion on the Arm, in Persons who are nice and difficult to Bleed, which proceeds from more than ordinary handling the part in feeling for the Vessel, or a small Suffusion of Blood under the Skin, but this accident is not attended with Pain, and easily removed by chafing the Part well with *Spirit of Wine*.

In Bleeding, the Membrane investing the Muscles sometimes happens to be hurt with the point of the Lancer, which Accident is ever attended with Mischievous Consequences, such as a Fever, a very great Inflammation, which in a very little time extends over all the inner side of the Arm, a hard Swelling which arises on the place of the Puncture, and terminates in a great Abscess, (and sometimes more than one) between the upper part of the Arm, and the extremity of the Hand. This Accident is ever worst, when it happens in Hospitals of Great Cities, or Camps, where the Air is corrupted, or in foul Bodies, or such as are over-heated by Fatigue, or Disorderly Living. Sometimes these Symptoms are not so violent, and the Patient only feels a considerable

Pain from the place quite down to the Thumb, on the same side, which incommodes him most in turning the Wrist round. This Symptom proceeds from a Hurt of the Tendinous *Fascia*, assisting in this Motion, and this remains for a long time. This Accident is soon perceived by a vehement pain in the instant of Pricking, extending from the Place to the Thumb, where the Tendon terminates. The ill Consequences which attend it are prevented in great measure by Defensatives, as by unction of the Part with Oyl of *Roses* and *Vinegar*, or the same beat up with the *White of an Egg*, *Bole Armoniack*, *Galen's Cerate*, and repeated bleeding in the other Arm. When the Pain, Inflammation and Swelling encrease, it is proper to use an Anodyne Cataplasim made of *Milk*, *Crums of Bread*, *Saffron*, *Populeum*, and Oyl of *Roses*, and attempt to break the Suppuration on the Orifice by some proper Application to the Part, as *Emplast. Divinum*, *Diachylon* with the Gums, or a Cataplasim made with *Sorrel*, *Lily Roots*, and *Basilicon*, or Rags dipt in warm *Oxycrate*. If an Abscess happen in any other part besides the Orifice, it is to be opened where the included Pus presents it self, and treated in the ordinary Method.

If none of these Accidents happen after the Puncture, and the Patient only complains of a Pain extending from the Orifice to the Wrist, without any fear of Inflammation or Suppuration, it suffices to use a Liniment made of Oyl of *Roses* and *Spirit of Wine* mixed, heated and repeated thrice a day, and after if occasion require, Oyl of *Earth-Worms*, with *Spirit of Wine*, or *Queen of Hungaries Water*, or rub well the whole Arm with Oynment of *Marshmallows*, and *Unguen. Martiatum* melted. During the Cure, the Prudent Surgeon ought to visit him several times a day, and perfect it with all possible speed, to secure his Friendship, and prevent his being offended at the Accident.

Of an Erisipelas after Bleeding.

The Surgeon is not always blameable, when an *Erisipelas* arises after Bleeding, for however the Puncture of the Muscular Membrane, or some Nerve or Tendon, may cause the effusion of a Hot, Bilious Blood, the common Materials of an *Erisipelas*; yet it is no less certain, the same effect succeeds sometimes on the opening Veins which are so very large, that the most unskillful Surgeon cannot hurt any other Part, or fear the least Accident. In such Cases
the

the Cause of the *Erisipelas* is to be ascribed to the ill Disposition of the Patients Blood, which upon opening the Vessel is conveyed thither by the Arteries with great impetuosity, and in greater quantity, than can conveniently return by the Veins. This Conjecture is confirmed, by observing that at the same time this boiling impetuous Blood causes an extraordinary Inflammation, and very great Tension of the Arm; it has the like effect on the Lungs, and causes great Difficulty of Breathing, Spitting of Blood, and all Symptoms of a Peripneumony, which ordinarily proves fatal after the *Erisipelas* is vanished: Add to this, the Inflammation is ordinarily less near the Orifice, than in more distant Parts.

THE SIGNS of an *Erisipelas* are manifest enough, viz. a large visible Swelling of the Arm, extending from the Shoulder to the Hand, with a Train continuing from the Arm-pit to the Elbow, the Skin appears red and inflamed, which is sometimes greater in one place, and sometimes in another. A continual Fever is kindled, the Patient feels a great pain with Tension and Burning, which will not suffer him to rest; a Difficulty of Breathing ensues, the Spit turns red, and there is a sensible heat in every part of the Body.

THE CURE. Bleeding on the opposite side is very Serviceable in remedying these Mischievous Accidents, especially if repeated seven or eight times soon after one another (to make a prompt and effectual Diversion) in conjunction with external and internal Medicines, to abate the Fervour of the Blood. The Patient must be confined to a strict regular Diet, to Cool, Purifie and supply a competent stock of Moisture to the Mass; such as *Veal* or *Chicken Broths*, with Leaves of *Succory*, *Lettuces*, *Chervil*, *Borage*, *Bugloss*, and a little Gelly, but not too Nourishing. The Patient may drink Pilsans with Roots of *Scorzonera*, *Marsh-mallows*, *Nenuphar*, *Dogs-grass*, *Liquorice*, and every Night two Doses of an Apozem, with cold Seeds boyl'd in it, adding some good Syrup and *Diacodium* $\bar{a}$. $\bar{z}$ i.

If the *Erisipelas* spread much and extend to the Breast, it is very proper to give powder of Vipers in the first Draught of Broth, or in some Cordial Water, as *Scabious*, *Scordium*, *Carduus*, *Scorzonera* or *Wood-sorrel* to abate its Violence, and fortifie the parts against the ill effects of the Malignant Bile, which infects all the Humours of the Body. The Diseased Part must be fomented with a Decoction of Roots of *Marsh-mallows*, Leaves of *Marshmallows*, *Violar*y, *Pellitory* of the

Wall, Grounsil, Betes, Herb-Mercury, adding after Boyling a little *Vinegar of Roses*, and so using it thrice or four times a Day, soaking Stupes in the Decoction, and applying them hot on the part, which ought to be rubbed likewise with a Liniment made of the Juices of *Nightshade, Plantane* and *Houfseek*, the Mucilage of the Seeds of *Psyllium, Linseed* and *Fenugreek* drawn in *Rose-water*, Oyl of *Poppies, Camphire, Saffron* and the *Cerate of Galen*, or lastly, let an Anodyne Cataplasm made of *Crumbs of White-Bread* boyl'd in *Milk* be us'd, adding *Yelks of Eggs, Saffron* and *Oyl of Roses*, and in extreme pain the Liquid extract of *Opium*.

If the Pain and Inflammation are moderate, a Discutient or Resolvent Cataplasm may be applyed, made of *Meal of Wild Vetches, Lupins* and *Linseed* boyled in *Oxymel*, adding *Flowers of Roses, Chamomil, Melilot*, together with *Oyl of Dill*, and *St. Johns-wort*. If the Erisipelatous Swelling Ulcerates in any part of the Arm, a Detergent lotion is proper, of *Birchwort, Periwinkle, lesser Centery, Gentian, Wormwood, Sanicle*, using after this, *Unguent. Nutritum, Pompholyx, Desiccativum rubrum, Unguent of Ceruss*, the *Santaline Cerate*, or other drying Medicines.

Doubtless the most dangerous Accident which happens in Bleeding is the pricking a Nerve or Tendon, whose Symptoms and Method of Cure are very much alike. The Nerves of the Arm lie so deep, it seldom happens they are pricked, but it falls out too often in opening the *Vena Mediana*, that the Tendon of the *Biceps Muscle* (which together with the internal Brachial bends the Cubit) is hurt, because this Vein most commonly runs over, or at least very near it. If the Nerve or Tendon be hurt, it is soon discovered by the violent Pain, which the Patient feels at the time of the Puncture, as well as by the ensuing Swelling in the Arm, which is very large, attended with strong Pulsation, great Inflammation, a continual Fever, and without speedy care to prevent them, *Convulsions, Delirium*, a Gangrene and Mortification of the Part, which cruel Accidents kill the Patient in a small time.

The Prevention of these Accidents is attempted by bleeding, and the same Regimen which is prescribed in the *Erisipelas* of the Arm, together with *Prisans, Cooling Draughts, Laxative Clysters* and *Apozems*. The Surgeon must have an especial care in treating the Wounded Part; to apply to the adjacent parts as well above as below, good *Defensatives* made of *Oyl of Roses, Whites of Eggs, Bole Armoniack,*
Juices

Juices of Solanum, Housleek, Vinegar, Oxycrate, made with Waters of *Plantane, Mulberries, Roses, Henbane-seed*, and a greater proportion of the sharpest *Vinegar*, than is commonly put in the Composition. Ancient Writers direct the pouring in hot Oyls, to absorb the Moisture issuing from the Wounded Nerve. This Gleet, unless prevented, soon turns sharp and acrimonious, and acquires an exceeding Malignant quality, *Guido de Cauliaco*, calls it a Nitrous and *Æruginous Sanies*, and commends Oyl of *Savin* preferably to all others. In defect of this Oyl of *Turpentine*, with the addition of a little *Spirit of Wine* may serve, or Oyl of *St. Johnswort, Lilies, Foxes, Castor, Euphorbium*, or Oyl of *Eggs*, if the Pain be excessive; Lastly, in want of all these, Oyl of *Dill* or *Rue*, made by the Decoction of the Ingredients in common Oyl.

The whole Arm is to be rubbed for a long time together with Oyl of *Roses, Camomil* or *Lillies*, or pretty sharp *Vinegar*. These Oyls are to be applyed very hot, and the whole Arm covered with the Cataplasms prescribed above in *Erisipelatous Tumours*, or *Emplastrum Diachalciteos* or *Oxycroceum* dissolved in Oyl of *Roses* and *Vinegar*, or *Emollient* and *Discutient Fomentations*, with a little *Sal Arminiac*.

If these Remedies fail of the intended effect, the Surgeon must dilate the Wound to give the included Sanies (which is lodged on the Nerve or Tendon) a free discharge, and open a way for the more effectual applying Medicines to its bottom. This Method is used by the best Practitioners, and amongst the rest *Guido de Cauliaco*, who in treating of Wounds of the Nerves and Tendons, directs a Surgeon in these cases principally to aim at, discharging the virulent Sanies, by making an Incision through the Teguments, and laying the bottom open. *Ambrose Parry* gives the same Advice, and indeed all who understand the Nature of these Wounds, know it is by no means convenient to defer the laying them open, and discharging the acrimonious Matter pent up, nor is this ever done so successfully after some time, as in the beginning.

When the Wound is sufficiently dilated upwards and downwards, with an Incision-Knife or crooked Scissars, (and made rather too great than too small) good Digestives must be put in it, as Liniment of *Arceus* melted pretty hot, or a Digestive Unguent of *Turpentine* washed in *Spirit of Wine*, Powder of *Myrrh*, Oyl of *Eggs*, and Gum *Elemi*, and the

Wound filled up with Pledgits (without forcing any in) and the same Oyntments, Cataplasms, Emplaisters and Fomentations continued on the Tumefied part as before, till a good Suppuration is procured and all Accidents cease, and then it must be incarn'd, dry'd and cicatrized after the usual manner.

In these cases a Prudent Surgeon will conceal his Fault to preserve his Fame; but if he finds the Patient is like to run any Risque of his Life, or there be the least hazard in the Case, he must sacrifice his Reputation to the Patients Health, and by this means make him some sort of Reparation, and instantly lay open the Wound, if there be the least danger in deferring it. If the Apertion has been too long procrastinated, and the Tension, Fever and Convulsion do continue, and the Natural Heat of the Part is extinguished, which is discovered by the rising of the *Vesiculae*, or little Bladders, the change of the Red into a Dark colour, tending to Livid, by the decaying and withering, and weight of the Part, and by a certain putrid Cadaverous Stench soon discernible in approaching the Patient. There is no time to be lost, and the Surgeon must use all his endeavours to take off the Convulsion, abate the Tension, recall the Natural Heat, and prevent the entire Mortification of the wounded Part.

To prevent the Convulsion, Authors advise the cutting the Tendon or Nerve asunder, whose Fibres are apt to be torn by the contraction of the Muscle. But sometimes even after cutting the Tendon asunder, the Convulsion does not cease. To abate the Tension, the Swelling is to be Scarified to the quick, throughout its whole Extent, especially in those places where it is Vesicated, or the Scarf-skin separated, or the Skin discoloured. That the Scarification is deep enough, may be known from the Patients crying out, and Blood issuing from the Orifice. The Scarification must begin beneath, and be continued up to the highest part of the Swelling in such a manner, that the lower Angles of the upper Incision may intersect the upper Angles of the lower, and the Skin by consequence suffer no constraint.

The Scarifications may be multiplied according as the Disease encreases, and made longer and deeper if the Gangrene do's not stop, in order to apply Medicines to the bottom of the putrefied Slough. All Medicines are to be applied very hot to restore the Natural Heat, and stir up the remaining Spirits to a Vigorous Action. Fomentations may be

be made with *Venice Treacle*, dissolved in *Spirit of Wine*, strengthened with *Spirit of Sal Armoniack*, or the yellow Water made with *Quicklime*, and *Sublimate corrosive*. A Fermentation made with a good quantity of *Common Salt* dissolved in very strong *Vinegar*, with the addition of *Spirit of Wine*, *Honey of Roses*, and *Egyptiacum* is a good Medicine if applied hot to warm the Scarified part. Those who have Experience, may compose variety of these Applications according to their Opinion of their Virtue, and dip Pledgits in them to put in the Incision, taking care to lay on some good Liniment to procure a laudable Suppuration, and a quick Separation of the gangrened and corrupted part.

This Liniment may be made of *Turpentine* washed in *Spirit of Wine*, with Powders of *Myrrh*, *Aloes*, *Egyptiacum*, *Basilicon*, *Oyl of Wormwood*, and *St. Johns-wort*. After the Incisions are filled with these and other like Medicines, it is convenient to apply on the part some Cataplasm, to put a stop to the progress of the Putrefaction, to discuss, dry, and abate Pain. This Cataplasm may consist of *Meal of Beans*, *Barley*, *Wild Vetches*, *Lupins*, boyl'd in *Oxymel* with *common Salt*, *Honey of Roses*, *Juice of Wormwood*, and *Hore-bound* Powders of *Myrrh*, *Aloes* and *Mastich*, with a little *Spirit of Wine* added at last, to give the whole a soft Consistence.

Cataplasms are very good on these occasions, tho' some Practitioners condemn them, upon a pretence they load the Part, stop the Pores, and hinder Transpiration; for this reason they prefer Compresses dipt in some of the before mentioned Liquors, with some Aromatick *Spirit of Wine*, with Bottles of hot Water, Bricks and Tiles applied to the part to preserve the Warmth. These Bricks and Tiles are to be wrapt in Linen Cloth several times doubled, to prevent burning the Patient. This is the more necessary, because the Parts being in a manner insensible, will endure very considerable burning before the Patient complain of it.

These Applications must be renewed twice or thrice a day, to work more effectually. In the mean time the Patient must take several Cordial Portions; such as are before prescribed in the Cure of the *Er'sipelas*, applying on the Heart some Epithem of *Carduus*, *Bugloss*, *Borrage*, *Rose* and *Treacle Water*, *Juice of Citron* and *Nightshade*, *Vinegar of Roses*, Powders of the three *Sanders*, *Diamargariton frigidum*, Confection of *Alkermes*, *Hyacinth* and *Troches of Camphire*.

If all these Methods fail of their intended effect, and the part appears to be mortified from little shivering Fits, *Nauseas*,

and heaving of the Stomach, and malignant Vapours arising from the putrid Flesh, infects the Heart. The only remaining Remedy to preserve the Patients Life, is a speedy Amputation of the Part, the Method of performing which, I shall shew in its proper place.

R E M A R K S.

Fabricius Hildanus, Cent. 5. Obs. 18. relates the History of a certain Man of thirty Years of Age, who had endured violent pains in the Head, in the Fits of an Epilepsy for a long time, he bled him in the Frontal Vein, upon which the Patient lost the use of one of his Eyes, which remained shut. The pain of his Head sometime after grew more vehement, and the Eye more inflamed to that degree, that its Membranes being corroded the Humours fell out, and the Patient for ever lost his Sight. But what is more surprising still is, he was deprived of his Speech, which he afterwards recovered by the Care and Diligence of his Physicians.

The same Author, *Cent. 6. Obs. 92.* relates the case of a Big-bellied Woman, who in the last Month of her going with Child, caused her self to be bled in both Feet at the same time, in hopes of obtaining an easie Delivery; immediately after these bleedings, she found her self in a very great disorder, the Throes which attended Women in Labour came upon her, and that Night she was delivered of a dead Child before her time was come, very narrowly escaping with her own Life. In the same Observation, he relates the History of a certain Man, who caused himself to be bled twice, one time immediately after the other in both Arms, to relieve him in a Lassitude, and Heaviness of the Head. About three hours after Bleeding, he found a great weight on the *Anus*, and a vehement Pain which was greater the following Night, and attempting to walk the next Day, the Pain, Inflammation and Weight encreast, still being attended with a burning Fever, great Restlessness, a *Nausea*, besides several other ill Symptoms. *Hildanus* searching him found a large Abscess, which after a Suppuration procured, discharged a quantity of Pus of an intolerable weight. This Abscess ascending lengthways of the *Rectum*, quite to the *Os Sacrum*, of which he was cured without any *Fistula* remaining behind.

Though it be very difficult for a Surgeon to prick the Nerve on the Arm, which lies beneath the Basilick Vein, because

because it must be a very deep Puncture which can reach it; yet *Ambrose Parry* assures us, that *Charles IX.* had this Nerve hurt in his presence, and suffered great inconveniences by it, for a long time after the Accidents were removed, by the Careful and Assiduous use of proper Remedies.

C H A P. XIX.

Of the Operation of the Aneurism.

THIS Operation is an Incision of the Teguments to lay the Artery bare, and make a Ligature on it.

THE CAUSE. There are two kinds of Aneurism, the *Genuine* and *Spurious*. The *Spurious* Aneurism is only the casual opening an Artery by the point of the Lancet, joyn'd with a loss of Blood issuing from the opened Vessel. The *Genuine* Aneurism is a Collection of Arterial Blood, which forms a Swelling within the Artery it self.

The *Genuine* Aneurism proceeds sometimes from an internal, and sometimes from an external Cause. The internal Cause of a true Aneurism, is the Action of some sharp and corrosive Humour, which finding a way to get out of the Glands, fixes on the external Tunick of the Arteries, and corrodes and consumes it. The internal Tunick in the mean time is exceedingly dilated, and distended by the constant repeated impulse of the Blood, and the Fibres of the external wanting strength to resist their effort of extrusion, they at length break forth, and form this Aneurismal Tumour. All parts of the Body are subject to Swellings of this kind, which are more frequent in decay'd emaciated Subjects where the Blood is more Saline, than in corpulent fat People.

The external Cause is some Accidental Punction of the outer Coat of the Artery, with a Lancet or some such like Instrument, or some Fall or Blow received, or perhaps some more than ordinary straining the Voice, in crying or holding the Breath in Labour, any of which recited Causes, are sufficient to strain or break the Fibres of the external Coat, and the Blood continually striking on the weakned place, produces an Aneurism.

The Spurious Aneurism is caused by the opening of an Artery which lets out the Blood, which after Extravasation, lodges in the Porosities of the Flesh and Skin, and there forms a Livid Tumour, or is quite evacuated if the Teguments are entirely divided by the Lancer.

THE SIGNS of a Genuine Aneurism, are an external Swelling, with a sensible Pulsation, the Swelling is soft, and if prest with the Finger subsides instantly, returning when the pressure is removed. There is no discoloration of the Skin, because the Tumour is supported by the Blood circulating through the Arterial Channel.

This Tumour sometimes equals the bigness of a Chestnut, and sometimes an Egg. These Swellings sometimes break off themselves, and sometimes the Patient carries them with him to his Grave without bursting; because the Artery growing Callous in the place where it was most of all weakened, is by this enabled to sustain the utmost shock of the Blood. These Callosities like those in *Fistula's*, proceed from the most Saline and Pungent Particles of the Blood, which lodging in the Pores of the Arterial Coats, mix with their Nutritious Juice, and harden it. Sometimes they proceed from the Blood, which being in a perpetual Fermentation, and passing through the Swelling, dries and hardens it, by rarefying and wasting that Humidity which kept its Tunicks wet. The Signs of a Spurious Aneurism, are the deep beating of the Artery, the almost livid colour of the Skin, the Tumour not rising so high as the true possessing a greater space, and not so easily yielding to the Finger, as the true Aneurism, and when the Artery is opened, the Blood coming out with impetuosity and force.

THE OPERATION.

The Operation is performed in the same manner both in the True and Spurious Aneurism, if preceding Methods prove ineffectual. Place the Patient in a Chair, let a Servant hold the Arm extended, then lay a good Compress round the Arm above the Swelling, and make a Ligature over this, which you may streighten at pleasure, by turning round a small stick called the Turniket or Turnstick. The advantage in laying a Compress under the Ligature, is to make it less painful, more equal, and prevent pinching the Skin. The Artery may be compressed to any degree required, by turning round the Stick. When the Artery is sufficiently compressed, take the Patients Arm with your Hand below.

below the Swelling, and make an Incision with a Lancet in the other Hand. This Incision must be made lengthways, according to the course of the Vessel, beginning below and ending above, and ought to be too large, rather than too little, to lay the Artery bare. The Tumour being opened evacuate the coagulated Blood with the Finger, and if there be any coherences, cut them with the crooked Scissars, to clear the Wound from the concentered Blood, and of all other extraneous Bodies, which sometimes are found in Aneurisms of long standing. You must loosen the Turniket from time to time, to discover the Orifice of the Artery, and then separate it from the Membranes, which connect it to the neighbouring Parts; the Separation must be made with a Spatula, for fear of cutting it with an Incision Knife. Then hold the Artery with a Hook, to free it from its other Ties, and when it is clear, pass a crooked Needle with a waxed Thread under it, cut the Thread, and draw out the Needle. The point of the Needle must be blunt, to avoid pricking the Part. After this make a Ligature on the strongest part of the Artery; first with a simple knot, and then place a Compress over that, strengthened with two other knots on, the Compress may be omitted if it shall be thought inconvenient. A like Ligature must be made on the inferior part of the Orifice, to hinder the ramifications of the Arteries from discharging any Blood. The Artery intervening between the two Ligatures must be left uncut, because the two ends of the Artery contracting and shrinking within the Skin, may thrust the Ligature off, which would be more dangerous than the Aneurism itself, since it would be difficult to find the ends, and tye them.

THE DRESSING. Lay on the Wound Dossils arm'd with Restrington Powders, an Emplaster and a Compress. Lay a great square Compress the whole length of the Arm, following the Course of the Artery quite from the Swelling to the Arm-pit, and keep all on with a Bandage made after this manner.

Take a Roller or Fillet of more than two Inches broad, and an Ell and half or two Ells in length (more or less according to the bigness of the Subject) apply one end beneath the Elbow, making two rounds about the Arm, then ascending Spirally (so as to leave one third part of the neather Roller bare in each Turn) in passing over the Tumour compress it a little by streightning the Roller, and continue to ascend in the same manner to the Arm-pit, then turn it round the Breast, and fasten it with Pins. The Emplaster and Compress must be

be about three or four inches broad, long enough to go round the Arm, and be slit a pretty way at each end, leaving a part plain and undivided in the midst. This Figure is convenient to prevent wrinkles; the Bandage must be kept on three or four Days without undoing it, and in the first Dressing you must be careful to take the Pledgirs very gently off.

THE CURE. Place the Patients Arm a little bended on a Cushion, extending it now and then for fear it grow stiff. Dress the Wound constantly at least once a Day, continuing the use of Restraining Powders, as *Terra Sigillata*, *Bole Armoniack*, *Colophonsa*, *Dragons Blood*, *Frankincense*, and *Laudanum*. After you are once secure, the Vessels will not re-open, Suppurate the Wound with some Digestive, made with *Turpentine* and *Yelks of Eggs*, and after a laudable Digestion obtained, deterge it well, and Cicatrize it. The Patient at first must be allowed only some few Liquids, for fear any Putrefaction arise from Repletion, and the use of solid Aliments, and their Wound must be treated according to the usual method of Practice.

The Marks or Signs by which it is known that the Artery is hurt, is the Resistance against the point of the Lancet, the elevation and violent beating communicated to the Vein by the Subjacent Artery, the springing out of the Blood by several distinct Jets, as happens in a wounded Artery; but with this difference, that it is not so lively sparkling or florid, and is not projected to so great a distance. If any of these unfortunate Accident happens, and you are desirous to have the Aneurism cured without Operation, bleed the Patient to abate the rapid Motion of the Blood, and put a stop to the progress of the Tumour, apply on the Artery a small Compress with half a Bean wrapt up in it, lay over this another Compress something larger, and then over that more still gradually encreasing, to compress the part more equally; around the Wound apply Defensatives, and keep all on with the Bandage used in the Aneurism, leaving on the Dressings as long as possible. When the Patient begins to regain his Strength, you must bleed again, lest the Vessels replete with Blood, press on the weak part of the Artery, and occasion a Tumour.

In a Spurious or Bastard Aneurism, the Blood is extravasated under the Teguments, and the most expeditious way to anticipate the Lividity and Gangrening of the part, and the usual Accidents attending these Cases, is to proceed instantly to Operation. But if the Patient will not endure this, apply Compresses and proper Discutients on the part, and have recourse to frequent Bleeding.

The

The external Aneurism is not near so dangerous as the internal, and it is often impossible to treat it, and even so much as to discover it. The following Medicines are good in external Aneurisms. *Rx. Powder of Sumach, Hypocistis, Acacia, Dragons Blood, Aloes, Frankincense* ā. ʒi. Beat all with the white of an Egg, to the consistence of an Emplaster, let this be applied to the part to heal the Wound, which must be well cleansed from all the Grumous Blood lodged in it. A plate of Lead applyed alone, or besmeared with the Juyce of *Plantane*, and bound on streight, puts a stop to the Growth, or cures an Aneurism quite, if applyed in the beginning. In these Palliative Cures, the Patient is often obliged to carry this Plate about him all his Life.

Fabricius Hildanus cured after the following manner, a large Aneurism equalling an Egg in bigness, hard and pale coloured, with an exceeding great Pulsation, and hindring the Patient in the free extension of his Arm. In the first place he ordered the Patient to observe an exact *Regimen*, then applied on the Swelling *Emp. de Cicuta*, and gave the following Clyster. *Rx. Roots of Marshmallows, Leaves of the same, Violar, Mallows, Pellitory of the Wall, Herb Mercury,* ā one Handful, Flowers of Chamomil and Melilot, ā half a Handful. Boyl all in water to the consumption of a third part, Dissolve in the strained Liqueur *Benedict. Laxativa* ʒi. Honey of Mercury ʒij. Common Oyl ʒiij. Salt one pugil. Mix these for a Clyster, and so give them. The next Morning to disperse the Melancholy Humour, predominant in the Patients Body. He prescribed the following Julep. *Rx. Roots of sharp-pointed Dock, Polypody of the Oak, Petroselin* ā ʒi. Agrimony, Speedwell, Dodder, Fumitory, Hop-tops, of each of the Cordial Flower ā. one Handful, Liguorice ʒi. Anniseeds, sweet Fennel-Seeds, ā, ʒss. Boyl these Ingredients in a competent quantity of Water, till reduced to one third, strain this, adding to each pound of this Decoction, Syrup of Fumitory, and de Epithymo, ā. ʒij. Cinnamon Water ʒiss. and let the Patient take of this Julep every Morning warm. Next he prescribed the following purging Porion. *Rx. Of the Decoction above prescribed* ʒviiij. Sena well cleansed ʒi. best Rhubarb ʒij. Dissolve in a Moiety of this Infusion, Solutive Syrup of Roses ʒi. Diaturbith with Rhubarb ʒi. Mix this for a purging Potion; the next Morning returning to the former Julep again each day. He renewed the Application of the *Emplastr. de Cicuta* on the Tumour. After this he gave him a Purgative
Potion

Potion made of the remaining Moiety of the *Infusion of Sena and Rhubarb*, with the Addition of *Confectio Hamech* ℥℥. extract of the Bark of *Esula* ℥℥. *Cinnamon Water* ℥℥. This Potion he gave him upon the third Day after the first Purge. He tells us this Purge wrought so violently, and with that good Success downwards, that the next Morning there was no appearance of any Aneurism or Pulsation in the Part. Then he applied this Emplaster, *R. Empl. Diachalciteos* ℥ij. Powder of *Mastich*, *Red Roses*, *Myrtle*, *Roots of the greater Consoud*, ā. ʒi. Make these into an Emplaster, with a sufficient quantity of *Rose Water*; and last of all he applied a knob of Linen on the Tumour, binding this streight on to compress the Swelling, and the Aneurism was cured.

There remains one necessary caution to be given the Operatour in this place, and that is, to extend the Patients Arm at times and by degrees, least in keeping it too much bent, a deep, strong *Cicatrix* be formed, which retains it bent the whole time of his Life.

R E M A R K S.

Riverius Obs. 34. relates the History of a certain Man of 50 Years of Age, of a very Melancholy complexion, who had a large Tumour on the right Clavicle, about half the bigness of an Egg, of the same colour with the Skin, with a very great Pulsation in it, which induced him to think it an Aneurism. The Patient dying, he found the ascending trunk of the Aorta from the Heart to the Clavicle dilated, enough to receive a Pullers Egg in its Cavity, with its Tunicks very thick and Cartilaginous.

To regain the free Motion of the Arm after the preceding method is compleated, it is necessary to oblige the Patient to extend and bend his Arm, and to turn round his Fist to prevent a Collection of a Glairy substance in the juncture of the Elbow, and too deep a *Cicatrix*, which sometimes has happened in Persons who have remained Lame all their Lives after for want of due precaution.

If the Aneurism has been for a long time neglected, and the Operation deferred, the Bandage must not be too streight, and must more frequently be taken off and Compresses applied, which ought to be first well soaked in some *Aromatick Wine*, with *Venice Treacle*, or *Spirit of Wine*, with *Volatile Salt of Sal Armoniack*, or any hot or Spirituous Liquors, proper to revive the languishing Heat and Spirits of the Part. In short, all Circumstances must be observed, which may

may conduce to prevent a Mortification of the Part after the Ligature is made.

Bartholine Cent. 4. Hist. 41. tells us of an Aneurism on the Breast of a certain Man in Naples, which the Surgeons refusing to meddle with, Translated it self behind, and the Patient became hunch-backed.

C H A P. XXI.

Of the Trepan.

TRepanning is the opening the Skull, to evacuate Pus, or extravasated Blood lodg'd on the Dura Mater.

THE CAUSES. Fractures of the *Cranium* or Skull, are the most ordinary occasions of performing this Operation. These are of two kinds, Incision or Cutting, made by an Instrument with a sharp edge, or Contusion by some blow with a blunt Instrument or Fall.

Hippocrates enumerates five kinds of Fractures of the Skull, viz. *Fissure, Contusion, Incision, Depression, and Contrafissure*; but in my Opinion, these may be commodiously enough reduced to two Species, of which Incision, Fissure and Contrafissure, make the first Member, and Contusion and Depression the second.

There are three sorts of Incision: In the first the Blow is perpendicular, and the edge of the Instrument enters the Skull, and without taking off any portion of it, makes an impression only in it. This by the *Greeks* is called *Eccope*, by *Hippocrates* *Hedra*, and by the Latin Writers, *Vestigium* or *Sedes*, and in *English* may be properly enough called an *Impression*. In the Second, the Blow is more oblique, and enters deeper into the substance of the Bone; but still without taking any part off, and this is termed *Diacope*. In the last kind, a piece of the Skull is entirely cut off, and this is named *Apokeparynismos*.

Contusions are divided into two kinds; viz. those which do not, and those which do destroy the Continuity of the Part.

The First is called by *Hippocrates* *Thlasis*, and is a simple Depression of the Bone, and not a real Fracture: This happens

happens in Children principally, whose Bones are pliant and flexible, and easily give way without breaking, like Pewter Pots, or any other Vessels made of malleable Metals.

The Second only, where there is a division of the Bone, can in a strict sense be termed a Fracture.

When the Bone is divided, and the Surface notwithstanding remains equal, the Fracture is named a Fissure. This if it be very visible is called *Rogme*, if scarce seen, or wholly imperceptible, *Trichismos* or a Capillary Fissure.

When the equality of the Bone is destroyed, as well as its continuity, and some fragment of the *Cranium* displaced, the Fracture by Hippocrates is called *Esphlasis* or *Euthlasis*, of which he reckons up three kinds: *Ecpiesma* when the *Cranium* is depressed, and some Splinter of the Bone sticks in, or presses on the *Dura Mater*. *Angisoma*, when there is a Depression, and the Fragment broken off lies under the entire Bone. *Gamarosis*, when either one end of the Fragment is depressed, and the other raised, or both ends are depressed, and it rises in the midst, leaving an Arch as it were vaulted over, from which this *Species* derives its Name.

In Infants, an Arch sometimes happens to be made by a Depression of the Bone, without a Fissure, which sometimes by its Elastick virtue, returns to its pristine State; sometimes the exterior Table of the Skull alone, returns to its Natural State, and the inner remains depressed. These Cases can only happen in very young Children, while the *Cranium* is Membranous before Ossification is compleated, and is not possible in Adults, whose Bones are dry and brittle.

Hippocrates speaking of a *Contrafissure*, pretends it may happen after three several ways, viz. In the same Bone when the upper part is struck, and the lower broken; or the outer Table receives the blow, and the inner subjacent Table is broken, or in different Bones, as when the Occipital-Bone is struck, and the Fracture is in the Coronal.

It is very improbable that a *Contrafissure* should happen in most ordinary Skulls, and any Person who considers that the several parts of this Bone are not continuous, but a multitude of pieces separated by Sutures, must needs admit it to be very difficult, to suppose a Fissure propagated from one to the other, and be convinced those Instances alledged by that Author, are not very much to be relied on.

But

But I profess here I would not be understood to arraign the Faith of that Great Man, or insinuate a suspicion of his design to impose on Posterity. That strain of Integrity and Candour which runs through every part of his Writings, is too visible to charge him with a Crime of this Nature. I make no doubt, those Instances which he mentions, really happened in the same manner as they are related ; but without question, in those Persons the *Cranium* was one continuous Bone, as in some Bodies it has been found to be without any perceptible Sutures in it. Admitting this to be true, it is not difficult to conceive that the left Parietal receiving a smart Blow, and yielding a little, may communicate the Motion to the Right, and that be crack'd, especially if we suppose it to be of unequal thickness, and weaker than the other.

If Contrassures happen in Skulls divided by Sutures, it is rational to believe they proceed from some Fall, which the Person who received the Blow, might happen to have had during the time he remained Senseless. Now the Wound making a visible Division of the Teguments, without any Fracture of the Bone, and the Fall on the contrary making a Fissure of the Bone without hurting the Teguments, it is very possible the Surgeon not being informed of the Patients Fall, may impute this Fissure to the first Blow. And thus it is very probable, *Hippocrates* might be led into this Mistake. Nor can it be thought strange, that a Fracture of the Skull should be made, without a Wound of the Teguments, since every Days Experience shews us, That Arms, Legs, and other Limbs are daily broken, without any Division of the Skin.

If it ever happen, as some Practitioners pretend, that the lower Table of the Skull is broken, and the upper notwithstanding remains entire, this odd effect must be explained after this manner. Between the two Tables of the Skull, there is a visible interstice fill'd with Marrow, and intertexted with Bony Fibres, which middle Substance is very springy and porous ; now if it be true, as most undoubtedly it is, that there is no *Vacuum* in Nature, the Porosities of this Substance must consequently be filled with some Matter or other ; which admit to be the Air ; it will then follow, that when a Man receives a smart blow on the Head, and the upper Table yields without breaking, the included Air is compressed, and impetuously shocks the inner Table, which if it be so compact and hard that it cannot obey, must inevitably

bly crack. The same reason may be alledged, in favour of those who espouse the Doctrine of *Contraffissures*.

Matter may sometimes be extravasated on the *Meninges*, though the upper Table of the Skull remain entire; for instance, when the Marrow contained in the interstice between the Plates, by some Accident being corrupted and growing Acrimonious, corrodes and cariates the lower Table, and so discharges it self on the *Dura Mater*.

THE SIGNS. Fractures of the Skull are for the most part visible to the naked Eye, and a sensible Fissure appears in the Bone, when the Teguments are removed.

If no Fissure appear, and there is ground to suspect one, tho' it be so small as to escape the sight, the usual practice is to lay Ink on the Part, and after some little time to wipe it off, for then if such Fissure be, there will appear a black Line. This Experiment cannot be practised in a Fissure of the lower Table, and no assurance can be obtained in this matter till Symptoms appear.

The Symptoms which discover the *Dura Mater* and Brain, do suffer in Fractures of the Skull, are various, and shall be recited in their proper places.

If any Splinters of the Bone be broken off, they press on or lacerate the *Dura Mater*, and sometimes wound the Brain it self, and cause an extravasation of Blood in it. When this happens, and Symptoms discover the Brain is affected, and the Surgeon cannot evacuate the Matter lodg'd on the *Dura Mater*, he must proceed to Operation. But if the Bone alone be concerned, though there be a Communication or part of it cut off, yet if no Symptoms appear, it is sufficient to Dress the Wound after the usual manner.

If the *Dura Mater* be inflamed, from whatever cause this proceeds, there is a pain and oppression of the Part, the Eyes are bloated and inflamed, the Face is Red and Swoln, the Patient is *Comatose*, there is a Fever kindled, attended with a hard Pulse and *Rigors*, the Patient voids Blood out of his Nose, Ears or Mouth, which last happens in great Commotions of the Brain.

If there be any pointed Splinters, there is ground to fear they may pierce through the *Dura Mater*, and Wound it. If there be a depression of the Skull; and some fragments be broke off, there is reason to apprehend an extravasation of Blood, and a Compression of that Membrane. If the Fracture

Fracture be large, and made with a sharp Instrument, it is most undoubtedly cut.

If there be a Fissure of the Bone, the Patient be *Comatose*, and Blood voided by the Mouth, Ears or Nose with a sensible Fever, as was noted above, there is Matter lodg'd on the *Dura Mater*.

The Weight or Oppression proceeds from a great quantity of Matter which presses on the Brain, and its Arteries which convey Blood into, and dilate it.

The Swelling and Inflammation of the Eyes, proceed from the Inflammation of the *Sinus* in the bottom of the Brain, which are productions of the *Dura Mater*. For these *Sinus* receiving all the Refluent Blood from the Veins of the Eye, when their Mouths are inflamed, must of necessity not receive it so fast as it is conveyed in by the Arteries, wherefore the Globe of the Eye receiving a constant supply of Arterial Blood, while the Venal do's not pass off, must needs be distended and inflamed.

The Inflammation of the Eye-lids, arises from the Inflammation of the *Pericranium*, their internal Membrane being a Continuation of that, and the Inflammation of the *Pericranium* it self, proceeds from the Pain caus'd by the Blows and Bruises it receives.

It is observable, that the Inflammation of the Eyes do's not follow immediately upon the Hurt received ; but at some distance of time after, sometimes upon the third, fourth or fifth Day. For the Inflammation do's not spread it self to its full extent of a sudden, but gradually ; and there is a great Tract intervening for it to pass thro', before it arrive at the Eyes.

The Bloated Swoln Face, proceeds from the Inflammation of the *Dura Mater*, which straitning the Mouths of the Internal Carotid Arteries, forces part of the Blood (which would be conveyed to the Brain by those Channels) to regurgitate and pass off by the external Branches of the same Arteries, to the several Parts of the Face.

The *Coma* or Dofiness, proceeds from an interruption in the Circulation of the Blood, which stagnates in the Vessels of the *Dura Mater*, and compresses the Brain, and by this means closing the *Meatus*, intercepts the passage of the Spirits. Now if waking arises from an open free Communication, when this ceases by any occasional cause, which compresses the Brain, and closes the Pores, its contrary Sleep or Dofiness must unavoidably ensue.

The Fever proceeds from the extravasated Matter, first corrupting, and then being absorbed into the Blood. One drop of *Pus* mixed with the Mass, is sufficient to produce this effect, and experience shews us, that in Abscesses of the Lungs, nay of the external Parts too, the Patient is never without a Fever.

The hard deep Pulse proceeds from a defect in the free circulation of the Blood through the Brain, the impediment it meets with here, preventing its rapid descent to the Heart, and its plentiful discharge into the *Aorta*.

The *Rigor's* or Shivering Fits, proceed from the Acrimony of the extravasated Matter lodg'd on the Membranes. This Acrimony is contracted by its long Stagnating and Putrefying there, and when it pricks the Membranes of the Brain, causes Convulsive Motions, and puts the Animal Spirits into a tumultuous and disorderly State, and driving them in a confused manner through the Nerves into the Muscles, causes Shiverings, Twitchings, and other irregular Accidents.

The Falling prostrate on the Ground after a Blow received, proceeds from a Concussion of the whole Brain, which puts the Spirits into great Confusion and Disorder. Now the Spirits flying to and fro without the Direction of the Mind, leave those Nerves which convey them into the Muscles, which serve to keep the Body erect. Nay if it be admitted that a greater quantity of Spirits are transmitted, this disproportion alone is sufficient to explain this effect, since there cannot be an equal contraction of the Muscles to balance the Body.

The loss of Sense, and a due perception of Objects, proceeds from a defect in the Transmission of the Spirits, which are not at all conveyed by the Nerves to their proper Organs, or at least in a confus'd disorderly manner.

The Giddiness or *Vertigo* arises from a violent and irregular Motion of the Spirits, which whirling about the Optick Nerve, impresses the same motion on the Rays of Light, proceeding from the Object, and depicting it on the *Retina*. This causes the Objects themselves to appear as whirling round, since the Mind cannot have any Image of a visible Object, except by the impression which its Rays make on the Animal Spirits, residing in the Optick Nerve.

The involuntary coming away of the Urine and Excrement, proceeds from a defect in the Spirits, sent to the *Sphincter* of the Bladder and *Anus*, which are not potent enough

enough to constringe them for the exercise of their retentive Faculty.

The *Deliquium* or Swoning arises from a want of Spirits, which are not sent in quantity enough to the Heart, to make so vigorous a contraction as is necessary to drive the Blood into the extreme Parts.

The Vomiting proceeds from the impetuous rushing of the Spirits into the Stomach, whose influx being for a time suspended, and they collected in the Brain, at length resuming their ordinary Course, force their way through all opposition, and violently entering the Part, excite this Symptom. If the Vomiting follow immediately on the Blow, it is a sign the Concussion was not very great; On the contrary, if the Vomiting happen after some time, it is a sign that the Concussion is violent, because the greater the Shock is, the greater by consequence the Inflammation and Obstruction, which it produces must be. But when the Shock is slight, and these are not very considerable, the Spirits do not stand in need of so vehement an Effort to remove those Obstacles, which impede their return to the Brain. In all great Concussions of the Brain, the Patient Vomits Bile; but in lesser, the Stomach only throws off the Aliments in its Cavity; the Reason of the difference is, that in all great injuries the Shock extends to the Gall-Bladder, which discharges that Sharp Liquor into the Stomach, and irritates it to a Convulsive Motion, whereas in the other, the disorderly Motion of the Spirits terminates in the Stomach.

The Brain it self suffers by extravasated Matter, which either proceeds from the Rupture of some Vessel in great Concussions, or some Cut or Blow which pierces thro' the Membranes; or lastly, Matter which insinuates it self thro' them, and translates it self into the Brain. The Symptoms which demonstrate extravasated Matter in the Brain, are a Fever with Paroxysms, Shivering Fits, Vomitings, Convulsion, *Delirium*, Lethargy, Apoplexies. In this case oftentimes the Liver or Lungs apostemate, which is perceived by a constant Pain on the Side or Region of the Liver, and frequent *Rigors*.

We have above ascribed the Fever to the admixtion of the purulent Matter, with the Mass of Blood and the Fits, to a greater quantity than ordinary discharged into it. For the purulent Matter which contracts an Acrimony by its detention in the Brain, becomes a sort of Ferment, which upon

its mixture with that Vital Liquor, augments its Heat and Motion, and as often as a new supply is poured in, must consequently cause a new Commotion. This acrimonious Matter mixt with the Blood in its Tour through the various Parts of the Body, pricks the Nerves, molests the Stomach and Membranes. Sometimes passes into one Muscle, then into another, and causes Shiverings, Vomiting, and various disorderly Convulsive Motion; and when these effects appear, they demonstrate the Blood and Spirits to be contaminated, and that a *Delirium* and Lethargy may be soon expected.

The *Delirium* proceeds from the Hurry and Disorderly Motion of the Blood in the Paroxysm of the Fever, and the corruption of the Brain by extravasated Matter, which penetrates into its substance.

The Lethargy is the effect of a great quantity of Matter extravasated, which being vehemently agitated and corrupted to the highest degree, its more subtil and fine parts are carryed off by the rapid Motion of the Blood, and the more heavy and unactive part left behind, which falling on the Glandulous part of the Brain, blocks up the Pores, stops the *Ostiola* of the Glands, and intercepts the passage of the Spirits; and the Brain being thus oppress'd and obstructed, a profound *Sopor* must necessarily ensue. On the contrary, when the extravasated Matter begins to dissipate, and the heavy load which oppresses the Glands, is in part driven away by the impulse of new Blood, the Spirits throw themselves with great impetuosity and disorder into the Parts. And this is the reason why *Deliriums* and Lethargies succeed each other by Turns. In Lethargies of this kind, the Patients Eyes are commonly open, and very much disturbed.

The Apoplexy proceeds from the impetuous Motion of the Blood to the Brain, and the excessive quantity of extravasated Matter, which by its weight oppresses the Brain, obstructs the passage of the Spirits, and forces the *Sinus* of the *Dura Mater* to regurgitate on every side, and drive back the Blood flowing into them and the Veins, by the Arterial Channels. This oppression and distention of the Brain, destroys all the Animal Functions, and soon puts a Period to the Patients Life.

Abscesses of the Liver or Lungs ensuing after Wounds of the Head, are the effects of a Translation of the Matter, which is first absorbed by the Mass of Blood, and after deposited in those *Viscera*.

Wounds

Wounds of the Brain are ever most dangerous, by how much nearer they approach the *Medulla oblongata*; since the Nervous Filaments which enter the white substance of the Brain, are in danger of being cut.

A Fracture made with a sharp Instrument is not so dangerous, as if made with a blunt one, or some Fall; for all cutting Instruments do not make any great concussion of the Brain, the injury is confin'd to the Part which the edge enters; but Falls and Blows shake the whole Brain, burst a thousand small Nervous Filaments, and sometimes Wound the Teguments, break the Skull in divers places, and separate the *Dura Mater* from it by the rudeness of the Shock.

If the Wound be made with Fire-Arms, and hurt the Brain or *Dura Mater*, it is desperate; for this rarely happens without taking off part of the Substance of the Brain, and the greatness of the Contusion is always attended with a speedy putrefaction. But oftentimes when the *Cranium* only is hurt, the Wound is not Mortal.

In Wounds of the Head, we may conclude there is a Fracture of the Skull, if the Symptoms appear, tho' no Wound be in the Teguments. For as I remarked above, these being pliant and extensible, may give way to the Blow without being divided by it, but the Skull which is hard and brittle, especially in Adults, must necessarily crack upon a violent Blow. For this reason Great Masts of Ships are made of diverse Pieces, that each may be more free to yield to the force of the Wind; whereas if they were made of one piece only, it must be very thick to make a sufficient resistance, and would be easily broken. Thus Swords may be broken without hurting the Scabbard which contains them.

In all Prognosticks concerning Wounds of the Head, great regard is to be had to the Patients Habit of Body, and the Violence of the Blow. If there be a Fissure only, it is not so dangerous as when some Splinters are broke off, and press on, or prick the Subjacent Membrane, especially if they hang together, and lie one over another; for thus they make a stronger Compression on the Brain. Besides when the Skull is broke in this manner, there is ground to believe the Blow is very violent, and there is a great Concussion of the Brain, which is never without danger. If the *Dura Mater* be torn by any Splinters of the Bone, the extravasated Blood and the Inflammation, render the Wound dangerous.

Great Commotions of the Brain are very dangerous, because in the Universal Shock there is a disruption of several Vessels in diverse parts, and it is impossible to discharge and purge it from that extraneous Matter which lodges in it, putrefies and corrupts its substance, and in the end proves Fatal to the Patient.

If Vomiting happen in the time of a *Delirium* and *Lethargy*, it plainly shews, that the Spirits which animate the Brain, have quitted their Post, and abandoned that Part to throw themselves into the Stomach, and this is a mortal Symptom.

Grinding of the Teeth demonstrates, that the extravasated Blood putrefies and corrupts the white Substance of the Brain.

Wounds in the Cortical part of the Brain are not Mortal, especially if the Aperture of the Skull be large enough to admit of the application of Medicines to the parts concerned. But if the Wound penetrate the White Substance, it is ever Mortal; for this is composed of an infinite multitude of Nervous Filaments, which being once divided, Death must inevitably follow. Besides great Branches of Arteries lie concealed in the anfractuositics of the Brain, which must necessarily be cut before any Medicaments can be applied, upon whose Division an irremediable Flux of Blood will ensue.

It is proper before we proceed farther, to enquire in this place, if it be necessary to apply the Trepan in a simple Fissure of the Skull. To which I answer, Fissures of the Skull seldom happen without affecting the Subjacent parts, which pleads for the use of the Trepan in a simple Cleft: However in this Case it is most adviseable to wait till Symptoms appear, since the upper Table may be cleft, and the lower remain entire.

In Fissures of the Skull, a Tension of the *Dura Mater* very often ensues, because this adheres to the Skull by a multitude of Vessels, which supply the inner Table with Nourishment, and an infinity of Filaments which pass thro' the Sutures, especially in Young Bodies. The Tension of the *Dura Mater* is often followed by an Inflammation, because the Vessels cannot remain long in this State without being broke and discharging Blood, which by its Stagnation grows Acrimonious, pricks and molests the Membrane, and creates an Inflammation, which sometimes ends in a Morification.

If in Fractures, Splinters of the Bone offend the *Dura Mater*, the Patient ought to be trepann'd without farther delay (to prevent all Accidents which may arise from extravasated Blood) and the fragments of the Bone removed.

If both Tables of the Skull be broke, the Operation must be made to prevent Accidents, though none as yet do appear, for it is impossible both these should be broke, without any extravasation on the *Dura Mater*.

It may be made an enquiry in this Place, if (after a blow on the Head) the Skull appear entire, and yet by the Symptoms it be evident there is Matter extravasated on the Brain, whether in this case it be advisable to apply the Trepan. There are some Practitioners who are for the Negative; alledging, when the *Cranium* is whole the Symptoms may arise from a great Commotion of the Brain, and it is impossible to determine the Place where the Matter is lodged. Others pronounce it necessary to Trepan if any of the Symptoms appear, and the Patient feel a fixed Pain in his Head. For my private Opinion, I must declare for the latter; for if this extravasated Matter remains undischarged, the Patient in all probability must be killed by it. Again, if you do not find Matter precisely at the place of the Aperture, the Head may be placed now on one side, now on the other, and the Patient obliged to hold his Breath, shut his Mouth and Nose to compress the *Dura Mater*, that the Matter may be evacuated.

Wounds of the Head are more or less Dangerous, according to the places in which they are. Fractures of the Occipital Bone are very dangerous, because the *Cerebellum*, *Medulla oblongata*, and *Lateral Sinus*, possess that part of the Head. These parts must inevitably suffer great commotion, and be much shattered, because the Occipital Bone requires great Violence to break it. Fractures on the top of the Head, and in the place of the Fontanel are very dangerous, because the Bones in those parts are very thin, and the blow being for the most part perpendicular, is very smart. The Danger do's not in this case depend on the Brain, which lies beneath the Bone, because we have diverse Instances of loss of Substance in these parts, and the Patient notwithstanding has been successfully cured. Fractures in the Sutures are more dangerous than in the other parts, by reason of the numerous Filaments and Vessels which are apt to be broken and spill the Blood contained in them on the

the *Dura Mater*. Fractures on the *Sinus* over the Eyebrows are very inconvenient, and difficult to cure, because these *Sinus's* being lined with an infinity of small Glands, furnish matter perpetually for Suppuration.

When after a due and exact consideration of all Symptoms, it do's appear there is *Pus* extravasated on the *Dura Mater*, there is a necessity of proceeding to the Operation; but because it may be both difficult and hazardous to undertake so nice a matter as this is, without an exact knowledge of the Structure of the Skull; I shall before I deliver the Method of performing it, premise a description of its Composition and Parts.

Of the Structure of the Cranium.

The Cranium or Skull, is a Bone compos'd of diverse Pieces, joyned together in a most Artful manner, so as to form a Cavity to contain the Brain, and defend it from external injuries.

Nature has not made the Skull one entire Bone, but formed it out of several Pieces, the better to enable it to resist exterior Hurts, to which it is expos'd, and to prevent any Fracture extending too far upon a blow received. Mechannicks seem to imitate this Artifice in works exposed to violent attacks; for instance, in Masts of Ships which are ever made of several pieces put together, that so being flexible they may be less apt to break.

Each Bone of the Skull is compos'd of two Tables, the Inner and the Outer. The Outer is a little harder than the Inner, and covered with the *Pericranium*. The Inner has divers Inequalities or Furrows, which the Vessels of the *Dura Mater* first excavated, and after enlarged, while this Plate was very tender and soft, by their continual beating.

There is a Medullary Substance called by the *Greeks* *Diploe*, and by the *Latins* *Meditullium*, which lies between the two Tables, and interspersed with Veins and Arteries, for its Nourishment like the Marrow in the other Bones of Human Bodies.

The two Tables of the Skull are solid, and serve as a Rampart to defend the Brain, to prevent this being too heavy, as it would be if it were one entire solid Bone; there is placed by the Providence of Nature a spongy light Substance, which by its unctuousity humecting the Bone, makes

it more tough and less brittle, and disposes it to yield a little to external Blows without cracking. Architects imitate this Structure, by laying Mortar between their Massy Stones, which by their vast weight would break, if some soft substance did not intervene to bear off the pressure. The *Cranium* of an Elephant is of a vast bigness, and seems to be ponderous, and yet is really very light, and so the *Sternum* of Ostriches and other Animals; for these Masses of Bones are compos'd of two thin plates, which contain a great many spongy *Lamelle* within.

The Magnitude of the Head, is proportioned to the largeness of the Brain. Its best and most Natural Figure is Oval, something rising before and behind, and flat on the sides. The eminence before and behind contains the Brain and Cerebel, and the flatness of the sides conduces to the more advantageous placing the Organs of the two Senses, of Sight and Hearing.

The Artist ought to be fully acquainted with the Figure, Asperities, Depressions and Sutures of the Skull, to prevent being imposed on; when he searches it to discover whether there be any Depression after a Blow received.

The Ancients pretend, that when any Eminence is wanting either before or behind the Head, there are but two Sutures in the *Cranium*, which represent a T, that when the Head is entirely round, there are two Sutures crossing each other, and forming an X; and lastly, that when the Eminences before and behind jet very much out, there are three Sutures which form an H. *Volcherus Coiter* relates, that he had seen at the House of that Learned Anatomist *Arantius*, one which wanted the antierior Rising, and both the Temporal and Coronal Sutures.

All the Bones of the Skull are united by Indentures, which are termed Sutures. These Sutures are True, False or Common; True Sutures are those which joyn the principal Bones of the *Cranium*, and resemble Stitches. Of this kind there are three, *viz.* The *Coronal* which joyns the *Coronal* Bone, or Bones of the Forehead to the *Parietal*. The *Sagittal* which proceeds along the top of the Head, from the fore to the hinder part, and joyns the *Parietal* Bones; and the *Lambdoidal* which joyns the *Occipital* to the *Parietal* Bones.

There are three Common Sutures which separate the Bones of the upper Jaw, from the *Cranium*.

The Sutures which joyn the Bones of the Temples to the Parietal Bones, are called Squammose or Scaly, upon a supposition, they barely lie over the Parietal Bone, as the Scales of Fishes do one over another. But this is a mistake, proceeding from a transient view; for upon a more accurate inspection it appears, that all the Bones of the Skull are indented with each other, and the Temporal Bone as well as the rest, is full of several little Angles, where it joyns to the Parietal. It may be remarked here, that the extreme edge of the Bone of the Temples, and that of the Parietal slope very much.

We have noted above, that there are three true Sutures, viz. the Coronal, Sagittal and Lambdoidal. The first receives its name from its resembling a Circular Coronet, or the Greek Womens wearing a Coronet or Garland of Flowers on it. The Sagittal is so called from the Latin word *Sagitta*, or an Arrow, because it shoots in a streight Line, from the hinder to the fore part of the Head. The third is denominated from its Figure, which is not unlike the *Lambda* or Λ of the Greeks. The Antient Physicians made Fontanels on the concurrence of the Sagittal and Coronal, and the Sagittal and Lambdoidal Suture to cure Defluxions on the Eyes.

The common Sutures may be reduced to two, That which joyns the *Os Ethmoides*; and the other which joyn the *Os Sphenoides*; for the Transversal is no more than a Continuation of the Coronal.

The Principal use of the Sutures, is to hinder the Fracture of one Bone from extending to another, to suspend the *Dura Mater* by giving passage to several Vessels and Nervous Filaments proceeding from the *Pericranium*; and lastly, to give way for insensible Transpiration. The last use assign'd to the Sutures, is evinced by the violent Head-achs, ordinary in such Persons where Transpiration is obstructed by the extraordinary closeness of the Sutures. In some Persons subject to perpetual pains in the Head, the Sutures have been found separated.

Of the Bones of the Skull in particular.

The Bones which compose the *Cranium*, are the *Coronal* which possesses the whole Fore-part, the *Occipital* which possesses the whole hinder part, and the *Parietal* Bones which form the sides. The *Os Sphenoides* or Wedgelike Bone, and
the

the *Os Ethmoides* are common to the Skull and the Face. The minute Bones of the Ear, the *Malleus*, *Incus* and *Stapes*, are contained in the Cavity of the *Os Petrosus*, or craggy Bone of the Temples.

The Coronal Bone possesses all the forepart of the Head, and receives its Name from the Crown of Laurel, placed on the Victors Brows. It is called the *Os Frontis*, because these Bones together form the Forehead, and is of a Semi-circular Figure, smooth and polite without, and very unequal within, by the Impression made by the Vessels of the *Dura Mater*, whilst the Bone is yet soft and tender. In some Skulls the Sagittal Suture is continued down to the Root of the Nose, and the Frontal Bone divided into two, which division some Authors pretend happens more frequently in Women than Men.

The Coronal Bone is a little thicker before than the Parietal, and by consequence the Surgeon may turn his Instrument with less fear in this, than the other which are thinner. This Bone is joyned to the Parietal Bones by the Coronal Suture, and to the *Ethmoides*, *Sphenoides*, and the Bones of the lower Jaw by the common Suture. In the forepart, it composes a great part of the Orbit of the Eyes. The Plates of this Bone are separated above the *Supercilia* or Eye-brows, and form two Cavities which extend to the middle of the Forehead, and sometimes are very large, and at others very small. There is great caution to be used in Trepanning in this place; for when the Brows are large and prominent, the Sinuosities likewise are large, and extend far. These Cavities open by a common *Foramen* into the Nose.

Anatomists have entertain'd various conjectures of the use of these Cavities, some are of Opinion they serve to reflect the Voice, and form an Eccho; alledging, that if these be deficient, the Voice is flat. Others believe they are a Magazin of Air which serves for the production of the Animal Spirits, and imagine this Air do's pass thro' the greater Angle of the Eye to cool it, and that it do's likewise very much assist the Sense of Smelling. But since these Cavities are lined with a Glandulous Membrane, interwoven with abundance of Blood-Vessels, it is but reasonable to think, these Glands discharge a great part of their Serosities and *Mucus* insensibly into the Nose. For we ever find the *Mucus* to be furnished by the Aperture of several *Sinus*; as for instance, the Bones of the upper Jaw and *Os Sphenoides*,
which

which are lined by a Glandulous Membrane: The perforations of the Lachrymal Bone, drain a great quantity of Moisture through the Nose, by the Tears evacuated that way.

The Coronal Bone has several Holes; for instance, two external above the Brows which pierce the Orbit, and thro' these passes a Branch of the Nerves of the Third Pair, which is dispensed to the Skin, Muscles of the Forehead and Eye-lids. Besides the external, there is one within above the *Apophysis*, commonly called *Christa Galli*, to which the Root of the right *Sinus* of the *Dura Mater* adheres. In its inner side are two *Sinus*, which contain the forepart of the Brain. It has one eminence with a long edge lengthways, to which the *Dura Mater* adheres.

Of the Frontal Bones in the Fœtus.

It is diverting to consider the Ossification of this Bone, which begins at the Circumference, and so proceeds to the Center, contrary to all others, which proceed from the Center to the Circumference. In a *Fœtus* of two Months old, the Coronal Bone is a Membrane, which by degrees becomes Cartilaginous. In the third Month several Points appear, which like so many Centers, begin the Ossification and above the Orbits, on each side a bony Crescent appears. In the fourth Month the bone is Ossified, except its middle, which still remains Membranous. The Orbits and the Hole thro' which the Motory Nerves of the Eye do pass, begin then to be formed. The Coronal is divided into two Bones by a Suture, which passes through its midst, which is very close at the end next the Nose, and very large at the other near the Fontanel: The bony points of the Orbits which appear as through a Cloud, are very discernable. In the fifth and sixth Month the Ossification advances, the Fontanel is lessen'd, and the middle of the Coronal is bony; and in the seventh Month the Ossification is perfected. The longitudinal *Sinus* is seen through the Fontanel, in the eighth Month. *Kerkringius* in his History of the *Fœtus* pretends, that if the Fontanel do's not close within some time after the Birth, it will remain open all the Patients Life; and assures us, he has often seen it open in Ancient People. In the ninth Month the Bones of the Head, particularly the Coronal and the Occipital approach, and pass one over the other, which facilitates the passage of the Infant into the World.

of

Of the Parietal Bones.

These are so called from their being placed on each side the Head, like two Walls to defend it. These Bones are externally very smooth, but their inner Surface has several Depressions or Furrows formed by the Pulsation of the Arteries, while the part is soft. These Impressions do not unaply resemble the nether side of a Fig-leaf. These are the most thin of all the Bones of the *Cranium*, which must be regarded, in applying the Trepan to prevent hurting the *Dura Mater* with the Teeth of the Instrument. These Bones are contiguous to the Frontal, Temporal, Sphænoïdal, and Occipital Bones; The Fontanel is the place where the Sagittal meets the Coronal Suture. *Hippocrates* calls this part *Bregma*, because it is the most tender of all parts of the Skull. The Antients gave it the name of the Fontanel, imagining that the Brain did most abound with Humidities in that part. *Aristotle* thinks the Fontanel Offifies about the time Children begin to speak; but there is no certain Rule in this matter. In the inside of each Parietal Bone, there are two great *Sinus's* in the middle. On each side of the Sagittal Suture, there is a small Hole for the Transit of the Veins, which convey the Reffluent Blood from the Teguments of the Head, to the right *Sinus* of the Brain.

Of the Parietal Bones of the Fætus.

In the three first Months after Conception, there is nothing conspicuous, besides a few points which appear obscurely, and the Ossification of the Membrane begins there. At the end of the fourth Month, the Ossification of the Parietal Bones is completed. At that time there are several Membranous interstices in the Sagittal Suture, and the Temporal and Sphænoïdal Bone; for the Ossification of the Parietal Bones begins at the Center, and terminates at the Circumference, contrary to the process of Nature, in the Coronal Bone. In the fifth and sixth Month these Bones grow considerably, and approach very near each other, so that in the seventh Month, they unite and form the Sutures. The Parietal Bones are separated from the *Sphænoides*, and Temporal Bone by an intervening Membrane. In the eighth Month, the Bones begin to touch each other, and in the ninth they are joyned to the *Sphænoides* and Templebone.

bone. The Fontanel, as I noted above, is formed by the concourse of the two Parietals, with the Coronal Bone, and is not closed till eight or ten Months after the Birth of the Child, and if we may believe *Kerkringius*, sometimes remains open as long as the Person lives. Midwives usually judge a Child to be dead in the Mothers Womb, when they find the Membrane of the Fontanel closed and sunk, because the Motion of the *Dura Mater* in living Children, keeps up this part.

Of the Bones of the Temples.

The Bones on the side of the Head are called the Temporal Bones, from the Latin word *Tempus*; because they discover the Age of any Person, the Hair sooner becoming Gray in that, than in any other part of the Head. These Bones are placed laterally near the lower part of the Head. The upper part of this Bone is then Semicircular, and is called the scaly Bone, or *Os Squamosum*, and the lower part very hard and rough, and therefore called the craggy part, or *Os petrosum*. The greatest part of these Bones is joyned to the Parietal, and upper part of the *Sphenoides*, and their lower or craggy part, is joyned to the lower part of the Occipital and *Sphenoides*.

The Squamous part of the Temporal Bone has its outer surface very polite and smooth, but has several *Sinus's* on its inner side, which receive the Brain. This has likewise several parts, *v. g.* its external *Apophysis* or Temporal Process, which the *Greeks* call *Zygomatick* from its being joyned to the *Zygoma*, or process from the Cheek Bone. Its *Mastoidal* Process which receives its Name from its resembling the Nipple of a Breast, and is placed behind the Auditory passage. The Process call'd *Styloides*, because it resembles a Probe by its long and pointed Figure, to the Superior part of which, the upper part of the *Os Hyoides* adheres.

Below the Temporal Process on each side is a small *Sinus*, into which the lesser Heads of the lower Jaw are articulated, and lastly on the inside, a hard rough Process from its solidity and cragged Figure, called the craggy Bone, or *Os petrosum*, which contains the whole Organs of Hearing. The Bones of the Temples have several Holes both within and without, through the first of the internal, passes a branch of the Carotid Artery. Thro' the second passes the Auditory Nerve, which

which after divides it self into the hard and the soft Branch. Of the External, the first is the *Meatus Auditorius*, or Auditory passage. The second is oblique, and transmits a Vein to the Jugulars. The third lies between the *Mastoides* and *Styloides* Processes, and the fourth penetrates the Auditory passage, and is called the Communicant Duct, through this passage the smoak of Tobacco is sometimes emitted by the Ear.

Of the Bones of the Temples in a Fœtus.

In the second Month the bones of the Temples are Membranous. In the third Month the *Zigomatick* Process, and the Circle to which the Membrane of the *Tympanum* or Drum is fixed, are bony. But during the whole stay of the *Fœtus* in the Womb, the Auditory Channel is Cartilaginous, and Nature to preserve the Drum, has drawn a thick Membrane over it.

The *Styloidal* Processes are of a bright red Colour like a Ruby, and lie close to the bony Circle, from whence they derive their Origin, not extending themselves, and standing out as they afterwards do. These Processes do not Ossifie, till a long time after the Birth, extending themselves gradually, and standing more and more out and encreasing. In the fourth Month, the Scaly part of the *Os Petrosum* becomes bony. The Cavities which compose the Organ of Hearing, are included in the craggy Process, and are formed of a bright red Cartilage. The craggy Process is as yet wholly Cartilaginous, and there is nothing bony in it, besides a little rough unequal Line, which extends the whole length of the bony Circle, and so passes beyond it. At this time the Temporal Bone is compos'd of three small bones, the Squamous or Scaly Bone, the Ring or bony Circle, and the strait Line of the craggy Process. In the fifth Month, the Scaly part of the Temporal Bone is joyned to the *Sphenoides*, and Parietal Bone. The Mammillary Process is formed of three small Bones, the first is called *Pyriformis*, from its resembling a Pear, which is joyned by its slender end, to the Squamous Bone. The second is called *Scutiformis*, from its resembling a Buckler, and is near as thick as the other. The third Bone is about the thickness of a pins Head, and divided from the other by the same Cartilage.

Near the hole through which the Auditory Nerve passes, there is another hole, which in Adults is of a long strait

Figure like a small Cleft. The Temporal bone is of a more irregular Figure in the *Fœtus*, than in Adults.

In a *Fœtus* of six Months old, the Massy part of the Hammer is bony. The longest branch of the Hammer is entirely Cartilaginous, and adheres to the Membrane of the Drum. The *Incus* or Anvil has nothing Cartilaginous, except the top of its *Apophysis*. The *Basis*, and the two Branches of the Stirrup are bony, the Stirrup it self appears Semi-circular above. The fourth or Orbicular bone is deficient in the *Fœtus*.

In the fifth Month, the Temporal bone is compos'd of six small bones, distinct from each other; *viz.* the scaly part of the bony Circle, (which has a Channel or Rift, in which the Membrane of the *Tympanum* is enclos'd) the craggy Process which contains the Organs of Hearing, and the three small bones of the Mammillary Process.

In the sixth Month, the *Scutiformis* and *Pyriformis* unite into one. The third bone is a little thicker, the Stirrup is not formed; the Hammer and Anvil are a little thicker, but their hardness continues the same. In the seventh Month, the smallest bone of the Mammillary Process joyns to the *Scutiformis* and *Pyriformis*. The small bones of the Ear do not differ from those in Adults, except that the longer Branch of the Hammer at first is only Cartilaginous.

Of the Bones of the Ear in Adults.

The *Os petrosum* or craggy Process, is divided into three Cavities, *viz.* the *Tympanum* or Drum, the Labyrinth, and the *Cochlea* or Screw.

The *Tympanum* contains in it four small bones, *viz.* the *Stapes*, the *Incus* and *Malleus*, or Stirrup, Anvil and Hammer.

The Stirrup is a small bone, which derives its Name from its Figure. It is compos'd of two Branches, fixed on a flat Oval *Basis*. In the joyning together of these two Branches above, a small *Sinus* is formed, in which the fourth bone is lodged.

The second bone takes its Name from a Smiths Anvil, which it is not very much unlike. It consists of three parts; the first is the thickest of all, and forms the Body of the bone, the two other are small Branches, and are only *Apophyses* of the former. The more bulky part has two Cavities, and one Protuberance to articulate with the Protuberance, and Cavity of the Head of the Hammer. This Articulation resembles a Hinge.

The

The Hammer is a little bone, which is something like a Workmans Hammer, the greater and thicker extremity representing the Head, and the thinner and slenderer the Handle. The hinder part of the head of the Hammer has two Protuberances, and one Cavity adapted to receive the Anvil. The Handle is long and slender, and is made thicker by two *Apophyses*.

The fourth bone has scarce any discernible thickness, and is not very much unlike the Scales of some Fishes. It is convex on the side where it joyns the Head of the Stirrup, and a little hollow where it is Articulated with the tip of the Anvil. None of these bones are covered with the *Periosteum*, and all are kept together in the place of their Articulation with Ligaments. They all have little Holes for the Reception of those Vessels which import Nourishment to them. The Hammer and Anvil are more solid, than the Stirrup, which is an exceeding thin and porous bone.

Of the Occipital Bone.

There is no bone of the Head requires more Care and Caution in trying it with the Probe to discover its Fractures, than this, which Difficulty proceeds from its irregular and capricious Figure. The Occipital bone composes all the lower and hinder part of the Skull. Its Figure is something Lozenge, and it is near an inch in Thickness. Its exterior part is unequal. This bone has two *Condyls* or flattish round knobs, which are received in the two *Sinus* of the first *Vertebra* of the Neck, by means of which Articulation, the Flexion and Extension of the Neck is performed. There are in its inner side two great Cavities, which receive the Cerebel; besides these there are two lesser lateral ones with two remarkable Furrows winding obliquely above the greater Cavities. Through these Furrows the two lateral *Sinus* of the *Dura Mater* pass, which discharge their Blood into the Jugulars; in the last place there is a Protuberance, to which the *Dura Mater* adheres.

The Occipital is joyned to the Parietal, Temporal, and Sphenoidal bones. This bone has five Holes, *viz.* The Great one, through which the Spinal Marrow passes; two Lateral ones, and two more between its *Condyls* and *Processus Styloides*. The lower part of this bone has several Protuberances, to which Muscles are inserted. There is sometimes a Triangular bone enchased into the Occipital, by three

Sutures. Sometimes this Triangular Bone is cleft through the midst, and each moiety joyn'd by a Suture.

The Lambdoidal Suture is frequently interrupted by several very small and longish Bones, which are inserted between the Occipital and Parietal ones, and serve to rivet them together. When the Surgeon searches this Bone to discover if it be broke or not, he must consider well the several pieces of which it consists, the small Sutures, and the Triangular Bone just now mentioned; for without this necessary caution, he will be apt to be impos'd on by its great inequality, and may be induced to believe it broke when it is entire.

Of the Occipital Bone in the Fœtus.

In the third Month after Conception, the Occipital Bone consists of four Triangular ones, *viz.* one great, and three small ones. The great Triangular Bone is sometimes all of one piece, and at other times it is made up of two, three or four bones joyned together. After the lesser Bones which compose the great Triangular one, are united into one large Bone, there is usually formed another less one of a Triangular figure likewise, one of whose Angles touches the greater Triangular, and the two other extend to the Condylodal Processes.

In the ninth Month, this Bone is united to the Condylodal Processes, and the great Triangular Bone. The small Bone beneath these Condylodal Processes is triangular likewise, and continues distinct; but sometimes after the Birth it is united to the great Triangular, and the two Condylodal Processes of the Occipital Bone. In a *Fœtus* of nine Months old, the great Triangular is sometimes divided into four unequal Portions. From the above recited particulars it is evident, there is no Bone in the whole Body, in whose Formation Nature seems to be less regular than this.

Of the Sphenoidal Bone.

This Bone composes the whole Basis of the Skull, and is contiguous to almost all the Bones of the Head, being crouded like a Wedge between them, and this is the reason of its Name. It is thicker on that side where it is united to the Occipital bone, and thinner and smoother in its upper part; but its Figure is so irregular, that it would be very difficult

difficult to give a clear *Idea* of it by a Verbal Description, and may be better learnt by once seeing it, than by all the words in the World. On its upper side it is joyn'd to the Temporal Coronal and Cheek Bone, and on its lower to the two greatest Bones of the upper Jaw, the Occipital and the *Vomer*. It has five Processes on its external Part, two of which resemble the Wings of a Bat, and by the *Greeks* are called the *Pterygoidal* or Wing-like Processes, in which are two *Sinus* termed *Fossæ*. Besides these, there are two more which are flat and smooth, which form a Part of the Orbits, and the nether part of the Temples, which is reckon'd as one of these *Fossæ*, and a small Process which is enchased in a Channel of the *Vomer*. The Sphænoidal Bone has on its inner side two Processes, which the *Greeks* term *Clinoidal*, because they bear some resemblance to the Posts of a Bed. Between these Processes, there is a Cavity which contains the Pituitary Gland, and this is called the *Sella*, because it is not unlike a Saddle. Between the Tables of the *Os Phenoides*, there is a double Cavity separated by a partition in the middle, which forms two *Sinus* opening by different Holes into the Cavity of the Nostrils. *Sylvius* imagines, that the *Pituita* distills insensibly from the Pituitary Gland into these *Sinus*, and by this way is conveyed into the Mouth. But there is little probability of the truth of this conjecture, because there are no visible perforations in the *Sella*, through which this Humour can be discharged. The Holes of this Bone shall be described, when we come to enumerate those in the *Basis* of the Skull.

Of the Sphænoidal Bone in the Fœtus.

In the second Month this Bone is Cartilaginous, in the third its two Wings are bony, in the fourth it is compos'd of eight small Bones, *viz.* the Pterygoidal Processes, the two small Bones which support the fifth Pair of the upper Jaw, and the two small Bones which form the *Sella*, which are at that time as big as a pins Head; and lastly, those which transmit the Optick Nerve. The two small Bones which support the fifth Pair of the upper Jaw, are divided by the bony Partition of the Nostrils. And those which compose the *Sella*, are separated by a Cartilage; but in the fifth Month they make but one, which resembles a Crescent. In the fifth Month, the *Os Phenoides* makes but one piece; yet in the midst of the *Sella*, there is a considerable Cartilage.

From the sixth to the ninth Month, the *Os Sphenoides* encreases, and by degrees hardens; and though it appears divided in several places by tendinous Interstices, yet it ought to be accounted but one bone, because these in process of time, wholly disappear in the same manner as in other bones.

Of the Os Ethmoides or Cribrosum.

The last bone of the Skull is the *Ethmoides* or Sieve-like bone, which receives its Name from a multitude of small holes which open into the Nose. In the midst of this bone, there is a small Process called *Crista Galli*, which very much resembles a Cocks Comb, on the side of this are a multitude of small holes, through which several Branches of the Olfactory Nerve pass, which serve to line the Cavities of the Nose, and are dispensed to the Organ of Smelling. The Lateral parts of this bone which form part of the Orbit, are called *Ossa Plana*, because they are flat and polite. These Plates are each pierced with a small hole called the Internal Orbital, through which passes a branch of the fifth pair. That part of the *Os Ethmoides* which is continued into the Nose, is a small Plate thicker on that side, which regards the bones of the Nose, and thinner where it terminates in the Channel of the *Vomer*. On the sides of the Cavity of the Nose are several small bony Plates, called *Ossa Spongiosa*, or the spongy bones, and are invested with the same Membrane that lines the Cavity of the Nose. Where these *Lamine* are very numerous as in Vulturs, Greyhounds, these Animals generally have an exquisite smell.

Of the Ethmoidal Bone in the Fœtus.

The Partition or Sepiment which divides the great Cavity of the Nose, the *Crista Galli*, and the *Ethmoidal* bone is not bony in the *Fœtus*. The *Ethmoides* Ossify's about the fifth Month, beginning with those small spongy bones which are fixed to the side of the Sepiment of the Nostrils. In the sixth Month the scaly part of the *Ethmoides*, which makes up a Portion of the Orbit, becomes bony. The other parts of this bone remain Cartilaginous, for a great while after the Birth.

But before I leave the bones of the Skull, I cannot forbear presenting the Reader with an exact Description of the holes in its *Basis*, which accurate and curious History;

History, I have extracted out of a Book entituled the *Compleat Surgeon.*

An Account of the Holes in the Basis of the Skull, and the Vessels which pass through them.

There are nine pair of Nerves which spring from the Spinal Marrow, and pass out of the Skull through as many several Holes. The first pair serves the sense of Smelling, and is divided below the *Os Cribriform* into several Filaments, which passing through several Holes, are dispensed to the internal Tunick of the Nose. The second pair are the Optick or Visive Nerves, which pass into the Orbit through several Holes, excavated in the Sphænoideal bone, immediately above the Anterior Clinoidal Processes. In that Portion of the Sphænoideal bone which forms the bottom of the Orbit, there is a Fissure about half an inch in length, which in the lower part beneath the Hole through which the Optick Nerve passes, is almost round, and larger above where it terminates in a very long acute Angle. There are several Nerves which enter the Orbit through this Cleft; as 1. The third pair called the Motory Nerves of the Eye. 2. The fourth pair called by *Willis* the Pathetic. 3. The sixth pair. Besides these three pair which pass intirely through this Cleft, there passes likewise the Superior Branch of the anterior Trunk of the fifth pair, which *Dr. Willis* calls the Ophthalmick Branch. Beyond the inferior part of this cleft, towards the hinder part of the Head, there appears on each side in the Sphænoideal bone, a Hole which do's not pierce the *Basis* of the Skull, but makes a sort of a Channel about an inch long. This Channel opens behind the Orbit at the top of the space between the Pterigoidal Process, and the third bone of the upper Jaw. The inferior Branch of the Fore-Trunk of the fifth pair, passes through this Channel. About the sixth part of an inch beyond the Channels, there are two more Holes in the Sphænoideal bone of something an Oval Figure. These lie on the back side of the *Sella*, through which the posterior Trunk of the fifth pair passes. The Hole through which the Auditory Nerve or seventh pair passes, is in the midst of the posterior part of the *Os Petrosum*, which looks towards the Cerebel. This Hole which is very large is the Mouth of a Duct or Channel, which running through the *Os Petrosum*, and sinking obliquely downwards to the depth of a sixth

part of an Inch, forms the bottom of a Sack, terminating partly in the *Basis* of the *Cochlea*, and partly in the Mouth or Entry of the *Vestibulum*. At the bottom of this Channel are several Holes; The most considerable of these is, that in the upper part through which a portion of the Auditory Nerve passes, and this is the entry of another Channel made in the *Os Petrosum*, which opens between the *Mastoidal* and *Styloidal* Processes. The other Holes transmit the branches of the soft pair of the Auditory Nerves. Below this Channel, there is a considerable Hole formed by the meeting of two unequal Ridges, the largest of which proceeds from the Occipital Bone, and the other from the inferior part of the craggy Process. From the middle of the Superior part of this Hole, there is a small bony point jets out, to which an Appendix of the *Dura Mater* is affixed, which divides the Hole into two parts. Through the anterior of these, the Nerves of the eighth pair and the Spinal Nerve passes out; as for the posterior Hole, its use shall hereafter be assigned. Near the great Hole of the Occipital Bone through which the Spinal Marrow passes, there is an Oval Hole, through which a Nerve of the ninth Pair passes. This Hole is entirely made in the Occipital Bone, and proceeding a little forward, passes obliquely from behind forwards. In the forepart of the Skull that Hole is sometimes double, but its two Mouths reunite on the external part of the Skull, and the two Branches which compose the Origin of that Nerve passing through them likewise, unite before they leave the Bone. Thus I have enumerated all the passages of the nine pair of Nerves, which proceed from the *Medulla Oblongata*; there remains only the Intercostal Nerve, and the tenth pair: The first of which passes out of the Skull by the same Hole, through which the internal Carotid passes in, and the latter arises from the Spinal Marrow between the Occipital Bone, and the first *Vertebra* of the Neck, and passes out through the same Hole of the *Dura Mater*, by which the Vertebral Artery enters.

The Vessels of the *Dura Mater* are the Carotids and Vertebrales with their Ramifications. In the Sphenoidal Bone behind the Hole through which the posterior Trunk of the fifth pair passes, there is another little roundish Hole, which transmits a Branch of the external Carotid Artery, which entering the Skull, adheres to the *Dura Mater*, and sends out divers Ramifications, which supply with blood all that
Portion

portion of the Membrane, which covers the sides and the top of the Brain. At the bottom, and at the top of the external Lateral part of the Orbit, above the acute Angle of the cleft of the Sphænoïdal Bone, there is a Hole through which a small Artery passes, which springs from that Branch of the internal Carotid, which imports Blood to the Eye. This Artery is dispensed to all that part of the *Dura Mater*, which covers the Anterior part of the Brain. The Vertebral Artery after it enters the Skull, dispenses a considerable Branch on each side, which is dispensed to all the Portion of the *Dura Mater* which covers the Cerebel. As for the Veins which accompany these Arteries, they pass almost all out of the Skull by the same Holes, through which the Arteries enter in. There are four great Arteries which supply the Brain with Blood and Spirits, viz. the two internal Carotids, and the two Vertebrales. The Internal Carotids enter into the Skull by a particular Channel in the Temporal Bone. The Mouth of this Channel is of an Oval Figure, and is seated on the external part of the *Basis* of the *Cranium*, before the *Sinus* of the Internal Jugular. This Channel proceeds obliquely from behind forwards, and after running about a quarter of an Inch in length, ends near the posterior part of the *Sella* in the Sphænoïdal Bone. The Artery makes a *Flexus* here, which forms a Roman S. In the place where the Carotid Arteries strike through the *Dura Mater*, they send out a great Branch which passes into the Orbit, by the inferior part of that Hole which transmits the Optick Nerve. The Vertebral Arteries issuing out of the Holes of the Transverse Processes of the first *Vertebra* of the Neck, in their Progress are reflected under the Superior Oblique Processes of 7 other *Vertebra*; after this they strike through the *Dura Mater*, and running along on the Spinal Marrow, enter the Skull through the great Occipital Hole, and then inclining to each other, unite and form but one Trunk. The Veins which export the Refluent Blood from the substance of the Brain, empty their Contents into the *Sinus* of the *Dura Mater*, all which discharge themselves into the Lateral ones, which issue out of the Skull immediately below the Nerves of the eighth pair, by the hinder part of the Hole formed by the juncture of the Occipital Bone, and craggy Process. The Lateral *Sinus* open into the internal Jugulars, whose Mouths are contained in a considerable *Sinus*, wrought on each side of the external part of the *Basis* of the Skull, and commonly known by the
Name

Name of the *Sinus* of the internal Jugular Veins. In the upper and posterioir part of the Hole through which the Lateral *Sinus* go out, there is an Aperture which is the extremity of a Channel. This Channel has its Mouth or Entry behind those Condyls, which stand on each side the great Occipital Hole, and after a Course of about a sixth part of an inch through the Substance of the Bone, opens immediately into the Vertebral *Sinus*, from whence indeed it seems to take its Origin. From hence it is evident, that the blood contained in the Lateral *Sinus* is discharged two several ways, *viz.* The greatest Portion into the Jugulars, and the other into the Vertebral *Sinus*, which sometimes appear only on one side, at other times are intercepted on both sides, and then all the Blood contained in the Lateral *Sinus*, is discharged into the internal Jugulars. Behind the Mastoidal Process, there is on each side a considerable Hole, through which passes a large Vein, which conveys back a great part of the Refluent blood from the Teguments and Muscles, on the hinder side of the Head. This Vein opens into the Lateral *Sinus*, in the place where there Flexuosity begins. In some Subjects, this Hole is only on one side, and sometimes there is none at all to be found; when this happens, the Blood contained in these Vessels, is emptied into the External Jugulars, with which the Branches of this Vessel communicate in three places on each Parietal bone, on the side of the Sagittal Suture, and at a little distance from the Lambdoidals. There is a Hole through which passes a Vein which conveys back the Refluent Blood from the Tegument of the Head, and this empties it self into the upper Longitudinal *Sinus*. These Passages are sometimes stoppt upon one side, and sometimes on both, in which case the Blood contained in the Branches of this Vein, is discharged into the external Jugular. In the midst of the *Sella*, there are two or three small Holes, through which some Modern Authors have imagined the *Lympha* contained in the Pituitary Gland is discharged into the *Sinus* of the *Sella*; but these Holes are filled with Vessels which carry the Refluent Blood from the Adjacent Bones and Membranes; nay, these Holes themselves are seldom to be found in Adult Persons. Between the Ridge of the Coronal Bone, and that of the *Christa Galli*, there is a Hole which is the Mouth or Entry of a Channel, which takes its course downwards for the space of about the sixth part of an Inch, through the thickness of the inner Table of the Coronal Bone: The Root

of the upper Longitudinal *Sinus* is inserted here, and it likewise transmits several Blood-Vessels which serve for the Nourishment of the inner Table.

There are several other Holes in other parts of the *Basis* of the Skull, the principal of which are on the craggy Process. These transmit diverse Vessels for the Nourishment of the Temporal bone, which contains the bones of the *Tympanum*. The other Holes transmit Vessels which supply with blood, the various parts of the *Basis* of the Skull.

THE OPERATION.

In applying the Trepan, the Artist must ever observe not to fix his Instrument on the Sutures, especially the Fontanel; because there are, as I before noted, an infinity of small Vessels which pass through them, and connect the *Dura Mater* to the Skull in those places. If the Operation were made there, there would be great danger of tearing those Fibres and Vessels with its Teeth, or perhaps opening the Longitudinal *Sinus* in Trepanning on the Sagittal Suture. If the blow happen to be on the Sutures, and you judge there is Blood extravasated on each side of the Head, the surest way is to apply the Instrument on both sides, because the *Dura Mater* adheres to the Sutures so strictly, that there can be no Communication from one to another.

The Trepan must never be placed directly in the middle of the Coronal, nor the Occipital bone, especially towards their lower parts; because the *Dura Mater* adheres very firmly to the productions in these places, and there is great danger of tearing it in turning round of the Instrument.

You must never Trepan on the Eye-brows, because of the great Cavities beneath, which are lined with a very thick Membrane, and the bone being double in this place, instead of coming to the Brain after the Perforation is made, you only discover a Cavity, and there remains still another bone to go through, which makes the Operation difficult and troublesome. Besides, as we observed before, the Wound would be a long time in healing, because the Glandulous Membrane which lines the Cavity, supplies matter for a plentiful Suppuration.

You must never Trepan on the Temporal bone, unless in case of great necessity, especially in that part where it is
conti-

contiguous to the Parietal, because here its thinnest part joyns to the lower part of the Parietal, and one part of the Temporal Bone must necessarily escape, since it only lies on the Parietal, and this creates great difficulty in the Operation.

You must never Trepan on the Lateral Sinus, which lie on the side of the Occipital, for fear of opening those Sinus with the Teeth of the Instrument.

When any Fragment of a Bone is depressed, or there is a Comminution; you must not fix the Trepan over them, but on one side. For if you should place it over, you would run a risk of thrusting those Fragments into the Brain, and Mortally wounding the Patient; and for this Reason, the Instrument is better applyed laterally, than on the Depression it self.

The Trepan may be applyed on any other part of the Skull, except those mentioned; but if the Bone be much shattered, and the Fragments or Splinters be so large, that upon the taking them out there is sufficient room for the Application of Medicines; you may supersede the use of this Instrument, there being no occasion for any farther Perforation.

The Incision of the Teguments must be made after some of the following ways, viz. On the Temporal Muscle it must have the Figure of the number 7, or Letter V, or which is better be made lengthways, following the course of the Fibres, and be large enough to place the Instrument. In all other places of the Head, the Incision is ordinarily made in form of a Cross; + but I think the long T is better, provided there be room enough to apply the Instrument. In Wounds of the Forehead the Incision is best made transversely, following the course of the Wrinkles, for then the Cicatrix will create less Deformity.

After a blow on the Head it is necessary to search, especially when the Skull is bare; and if the Orifice be not large enough, it must be Dilated, and the Bone laid bare, in order to discover the Nature of the Fracture. When the Incision is made, the Wound must be filled with dry Lint to obforb the Blood, which otherwise would hinder a due inspection of it. If Blood issue from any Artery, the Artist must make a Ligature on it, and leave the Wound in this condition till the next day.

If the Bone be very much shattered, and some Fragments of it depressed, it must be raised, and you must leave the Dressing

Dressing till the Hæmorrhage be stopt, that so you may consider of the best place to apply the Trepan.

After the Incision is made (whether it be of the form of a Cross, -|- , V or T) the Teguments removed, and the *Pericranium* scraped off (by a *Spatula*, or with the Nails) the Flux of Blood stopt, and four and twenty Hours are lapsed, since all these Preparatives are made (which last Circumstance is not always necessary, especially when some pressing Symptoms require greater Hast) you may proceed to the Operation it self in the following manner.

Place the Patients Head in a convenient Posture; this is ordinarily done by laying it on a Pillow, and most Surgeons stop the Ears with Cotton, to prevent his hearing the Noise of the Standers by, or the grating of the Instrument. When the Head is conveniently placed, begin the work by making a small Hole with the Perforative or Piercer: in this small Hole put the Pin in, to keep the Trepan stable, which otherwise would be apt to rowl about, and make several Incisions with its Teeth. You must be careful to chuse a Head suited to the largeness of the Hole you intend to make; hold the Handle of the Trepan with the left Hand, and support the Forehead with the same Hand that holds the Trepan, that so you may press its Head against the Skull, and make the Perforation more commodiously; at first turn your Instrument very quick. When the Trepan has taken sufficient hold take it off, and lay aside the Pin; for if this continue in much longer, there will be great danger of piercing the *Dura Mater*, some Skulls being exceeding thin. Cleanse the teeth of the Instrument with a little brush, every time you take it out, and after place the Crown in again. Every time you take out the Instrument, which is to be done frequently, you ought to try how deep you have gone, for fear least in turning it too hastily round, you endanger a Laceration of the *Dura Mater* by its Teeth.

You must likewise with a quill cut after the manner of a Tooth-picker, try the depth of the Perforation in each part of it, that in case it be cut more on one than the other side, you may lay the stress of the Instrument on the opposite.

When you find Blood in the Teeth of the Trepan, you may be assured the Instrument has past through the first Table of the Skull, and is arrived at the *Diploe*. When you perceive this, you must turn slowly and very cautiously, for fear of taking off the first Table, and leaving the second, which

which Accident makes the Operation more tedious and troublesome. When this happens, take out that piece which is in the Trepan, and continue to cut through the second Table without being surprized; for the first Table is very apt to be broken off after blows with a blunt Instrument, because the Shock most commonly separates the *Diploe* from the Bone. Try from time to time with the Myrtle Leaf, whether the piece you are about to take out shake, and be near cut through. This is done to prevent hurting the *Dura Mater*, which you must inevitably do, if you continue to saw the Bone, without searching if it be loose or not. Some Artists use the *Terebellum* for this purpose, but in this case it is necessary to have made a way into the Bone while it is stable, before the application of the Trepan. In taking out the piece which shakes, you must not attempt to pull it away forcibly, but remove it gently, for fear of Lacerating the *Dura Mater*, which frequently cleaves to it in young Bodies. If the *Dura Mater* adheres to the Skull, it may be separated with the Myrtle Leaf. Some Practitioners wait for a Suppuration to separate them, but since this happens for the most part only in young Subjects who have the *Dura Mater* soft and lax, the Bone may conveniently enough be freed from it by the *Spatula* or Myrtle Leaf.

When the Piece is removed, there always remain in the bottom of the Aperture several little Asperities, which are to be pared away with the *Scalper Lenticularis*, or Lenticular Instrument Knife (so call'd from a small knob not unlike a Lentil) with which you press a little the *Dura Mater* to facilitate the issue of the extravasated Blood and *Pus*.

To evacuate the Blood and *Pus*, place the Patients Head inclining in such a commodious posture, that the Matter may make its way to the Aperture, and then bid the Patient shut his Mouth and Nose, and hold his Breath. These Efforts force the *Dura Mater* to approach close to the Aperture, and drive out the Matter extravasated on it. This Rising of the *Dura Mater* is effected by the contraction of the Diaphragm in the Retention of the Breath, which must necessarily constrict the descending Artery passing between its Tendons, and by consequence drive a great proportion of Blood into the Ascending Trunk, which passes by the Carotid and Vertebral Arteries into the Brain.

The Extravasated Matter which presents, must be absorbed by false Tents. If any Blood or *Pus* be lodged under the

the *Dura Mater*; it must be let out with a Lancet, having an especial care not to wound the Brain. The Prudent Surgeon in this Case, ought to conceal his Lancet in a false Tent, and so convey it in and perform his Work, under pretence of wiping the Membrane.

THE DRESSING. In the first place, put into the Aperture a *Sindon* dipt in *Honey of Roses*, and *Spirit of Wine*, and introduce this between the Skull and *Dura Mater*, to humect, deterge and attenuate the Matter. This *Sindon* is a Rag of very fine Linen, cut exactly round, through the midst of which you must pass a Thread for the drawing it out, in dressing of the Wound. It must be larger than the Aperture, for the conveying the benefit of the Medicines, with which it is imbibed to the neighbouring parts, and preserving the *Dura Mater* from being hurt by the Asperities of the Bone, when the Brain is dilated. Over this *Sindon* apply another arm'd with proper Medicines, and then fill the remaining part of the Aperture with Pledgits dipt in some vulnerary Liquor. Next lay a large Pledgit of dry Lint to cover the Bone, and between the Lips of the Wound, put in Dosils arm'd with some good Digestive made of *Turpentine*, and the *Yelks of Eggs*, in the last place cover all with an Emplaster, and keep it on with the Bandage, called the *Great Cap* for the Head.

To make this, Take a large Napkin and fold it lengthways unequally, or in such manner that it want three Inches of being folded in the midst. When you have thus dispos'd it, take it in the midst, so that the four fingers of each Hand be placed under, and both the Thumbs over it, and bring it behind the Patients Head, and not before, for fear of striking him over the Face with it. Before you place the Napkin on the Head, bid a Servant keep the Dressings on with his Hands, for fear of throwing them off, or disordering the Compresses and Emplasters. Then apply it on the Forehead; so that that part which is three Inches longer than the other, may fall on the Nose, and bid a Servant hold the two upper ends under the Chin, or let the Patient do it himself if he be able, and do you take the two lower ends and draw them strait to the side of the Head, with both Hands, (thus several Pleats will be made on the side of the Head, resembling a Goose Foot) then bring these two ends behind the Head, and crossing them there, pin them where they end. In winding the Napkin round the Head, it forms two great Sacks or Baggs which fall on the sides, wherefore

wherefore take the two ends which the Servant held in one Hand, and slide your other Hand open into the Baggs, and draw them down, so that they may make as few folds as possible, then bring them to the top of the Head, and apply them to the lesser Angles of the Eye. Be careful where they cross each other on the top of the Head and behind, to make every thing fit very well, and pin them. In the last place, tie or pin the two ends which you gave the Servant to hold under the Chin. When the Dressing is thus finished, let the Patient be laid down, and proceed in a proper Method for his Cure.

THE CURE. The Patient must be drest twice a Day after the manner above described, and the parts round the Wound embrocated with *Oyl of Roses*, with the addition of a little *Spirit of Wine*. But observe here, the Head ought to be shaved before the use of these Applications. One of the principal cares of the Artist ought to be, to procure a laudable Digestion in the External Wound, nothing gives the Patient greater Relief than this; because the *Dura Mater* has a great Communication with the Teguments, by means of the intervening Blood-Vessels. The Patients Chamber must be kept in a Temperate warmth, with a good Fire in it, if the Weather be Cold. The Wound must never be opened without a Chafingdish of Coals, and the Curtains drawn close, to prevent the Air from corrupting it.

Sometimes the Inflammation of the *Dura Mater* is so violent, that it forces it self out through the Perforation of the Skull: to remedy this Accident, you must stop well the Hole, and have Recourse to Bleeding, Clysters, and a cooling Diet.

In Wounds of the Brain and *Dura Mater*, there arises sometimes a *Fungus* or soft fleshy Excrecences, which are formed out of the Oily Substance, which abounds in the Brain. When these Tumours happen apply Desiccatives, as *Spirit of Wine*, *Tincture of Aloes*, &c. and shun all greasie Medicines. If these fail, use the more mild Catharticks, as *Turpentine dried and powder'd*, *Powder of Iris Florentina*, *Burnt Alom*; or lastly, if these are not sufficient, *Red precipitate*. Observe here for the more easie consuming the Excrecences, the Wound must be so filled, as to compress them a little.

Next after these the Decoctions of the Vulnerary Plants boiled in *White-wine*, with a little *Honey of Roses*, are to be

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commended. In short, Desiccative or Humeſting Medicines are proper, according to the different condition of the Wound. But of whatever kind the Applications are, they ought to be, actually hot, and that to as high a Degree, as the Patient can well endure them.

If the Fleſh be firm and ſound, the Surgeon muſt endeavour to keep it ſo; but if it be flabby and ſoft, he muſt compreſs it, and apply good Reſolvents.

The Pledgits which are laid on to the Bone, ought to be dipt in ſuch Spiritous Liquors, as promote exfoliation, for which intent Tincture of *Euphorbium* is excellent.

Befides Local Applications, Internal Medicines muſt be given as occaſion requires, and the Body always kept open.

In all his Dreſſings, a prudent Surgeon muſt be careful not to uſe ſoul Cloths, or ſuch as have before been made uſe off in ill conditioned Sores (as is done in Hoſpitals, where they boyl all the Raggs in a Lee, and after uſe them again) becauſe there remain in their Pores ſome Acid Corroſive Spirits, which excoriate and gangrene the *Dura Mater*. All Oleous and Acid Medicines are injurious to the Membranes, the firſt, becauſe they ſtop the Pores, and hinder Transpiration; and the laſt, becauſe they coagulate the Humours, and create Obſtructions.

There is no certain time, can be aſſigned for the exfoliation of the Bone, ſometimes it is compleated ſooner, ſometimes later. The *Callus* which fills the Aperture, is moſt commonly formed in 40 or 50 Days. It is ſooner perfected in young, than in old Bodies, but is never ſo firm as the Natural Bone.

Before I leave this Subject, I ſhall preſent the Reader with an inſtance out of *Fabricius Hildanus*, of his Proceſs of Cure in a Fracture of the Skull. This Author tells us, in a certain Caſe, he began the Cure, by giving the Patient a Clyſter, and after that was come away ſhaving his Head, and embrocating it with *Oyl of Roſes* and *Myrtils*. Next he made a Crucial Inciſion, raiſed the Teguments, cleared the *Pericranium*, laid the Skull bare, and filled the Wound with fine Tow wetted with the white of an Egg. The next day he removed ſeveral Fragments which were broke off from the firſt Table, and applyed the Trepan. And the Patient being in vehement Pain, he laid on the *Dura Mater* a ſmall Satin *Sindon*, humeſted with *Honey* and *Oyl of Roſes*, and filled up the Hole with the following Digestive.

B. Turpentine waſhed in Sage and Betony Waters ʒi. Oyl of

N

Roſes,

Roses ʒiſſ. Yolks of Eggs ʒij. Gum Elemi diſſolved with theſe Oyls over a gentle Fire, and ſtrained ʒi. Add to theſe Saſſon in powder ʒi. Yolks of two Eggs, Mix theſe together into an Unguent.

After having applyed this Mundificative to the Wound, he laid on an Emplaſter of *Baſilicon*, embrocating the whole Head and Neck with *Oyl of Roſes* and *Myrtles*. The ſame day he gave him a Clyſter, preſcribed him a Regular Diet, continuing to treat him in this manner for ſeveral Days. In the mean time he diſcharged the Pus through the Aperture, and by degrees the Fever and other Symptoms abated.

After the Pain and Inflammation were abated, he mixed ſome drops of *Spirit of Wine* with *Honey of Roſes*, to lay on the *Dura Mater*, applying to the Wound it ſelf this Detergent. *R. Root of Avens, Angelica, Round Birthwort, Iris Florentina, ʒ. in powder ʒi. Extraſt of Sage and Betony ʒij. of Gum Elemi diſſolved in Oyl of Roſes ʒij. Mix theſe in a Mortar, and make an Unguent with a ſufficient quantity of Honey of Roſes, and a little Spirit of Wine, and then apply it to the Aperture. Next he laid over all the following Emplaſter. R. Emplaſter of Betony ʒiiij. Gum Elemi diſſolved in Oyl of Roſes ʒi. Damask Roſes, Myrtles in powder ʒ. ʒi. Maſtick, Calamous Aromaticus, Angelica, Avens, ʒ. ʒi. with a ſufficient quantity of Oyl of Roſes and a little Wax, make an Emplaſter.*

During the whole Proceſs of the Cure, he gave him conſtantly Clyſters once every other Day, or ſometimes every Day, if he did not go to Stool, purging him upon occaſion with the Solutive Syrup of *Rhubarb, Agarick, Senna, Manna* and *Caffia*, till the Patient was intirely cured.

R E M A R K S.

Fabr. Hildanus, Cent. 1. Obſ. 13. relates that he had ſeen a Woman who after receiving a Contuſ'd Wound on the right Parietal Bone (which was broken and depressed by the blow) vomited Bile and crude Aliments. He took off about 4 fragments of the Bone, and a ſmall portion of the Brain about the bigneſs of a Bean. The next day he removed more Splinters of the Bone with a Portion of the Brain about the bigneſs of a Hazel Nut, he continued to take off ſeveral more ſmall Portions of the Brain, notwithstanding which the Patient was perfectly cured.

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In the same Observation he assures us, he had seen a Maid wounded on the Head, who had several large Fragments of Bones taken out, and the *Meninges* being rotten, one side of the Brain lay bare. For the space of three weeks together, the Surgeon was obliged to remove some Portion of it, which Nature separated, so that one part of the Brain was entirely taken out; However it lay thus open, several Carnous Tubercles sprung up on its Substance, of which each was as big as a Vetch. These Tubercles sensibly encreasing, joyned one to another, forming a pretty solid Carnous Tegument, which filled all the Cavity of the Brain, and covered it, and the Girl in all appearance recovered her Health, but the Cure of this Wound being neglected, she dyed six Months after. That which occur'd most worthy of Remark in this Case, was, that in the beginning of this Cure, the Patient did all her ordinary business about the House, as if she had been perfectly well, without any Pain or Fever.

Some Years ago, there was in the *Hôtel Dieu* at *Paris*, a certain Woman who receiving a blow on the Head, the Teguments were all corrupted, and a Moiety of the Skull was laid bare. Both Tables exfoliated, so that part of the Frontal Bone, and a Moiety of the two Parietal Bones came away all at a time; and this Bony Case being removed, the Brain lay bare, and its Motion was very discernable. By degrees it was covered again by a Carnous Matter, which consolidated, but this Cover never arrived to such a degree of hardness, as to resist the impression made by the Motion of the Brain. Upon the least touch imaginable with the Finger on this Carnous Membrane, the Woman instantly seemed to see a thousand Candles. She had a Cap of Lead made to cover the part, and defend it from external injuries, and carried about the exfoliated Bone, as a Cup to receive Alms in.

The same Author, *Cent. 3. Obs. 12.* informs us, he had seen a Child of 10 Years of Age, who had a great Depression on the Occipital Bone upon a Fall. No dangerous Accidents appearing at first, the Parents neglected the Cure. The Child who before was very witty, lost his Memory and Judgment, and was rendred incapable of Study or Learning a Trade, and at Thirty six years of Age, became perfectly Stupid.

He farther relates, that a Child of three Years of Age falling upon his Forehead, made a Depression large enough

to turn the little Finger in; no other Application was used, besides a Compress dipt in *Spirit of Wine*, and renewed every day, and the Child was perfectly cured without any inconvenience remaining behind. These Relations compar'd make it evident, that the Functions of the Soul are not performed in all parts of the Brain, since the depression of the Occipital Bone in one produced a Stupidity, and yet in the Frontal, the same Accident was attended with no consequence prejudicial to the Patient.

If Wounds of the Head are attended with extraordinary Accidents, they sometimes prove very serviceable to the Patient. *F. Hildanus, Cent. 2. Obs. 8.* assures us, that a certain Person having the *Cranium* fractured at the Concourse of the Sagittal and Coronal Suture, by this Wound was cured of a *Vertigo* of long standing. There remained a slight Ulcer on the place of the Fracture, which perhaps effected this cure by the discharge of Matter.

Schenkijus tells us, a certain Epileptick Person happening to have a Fracture on the Skull, was by this means cured of a Distemper, with which he had been for many years afflicted.

Riverius Cent. 1. Obs. 37. relates the History of a young Girl of 7 years of Age, who for the space of two Months, had been tormented with so violent a Pain in her Head, extending to the Eye-brows, that she begged to have her Head cut open with a Knife. This vehement Pain flung her into two or three violent Fits of an Epilepsy, to that degree she foamed at the Mouth. At length she died, and a great quantity of Pus burst out of her Nostrils, which caused the Physicians to believe, there was an Abscess in the Brain. To discover which they opened the Head, but nothing appeared there, besides a serous Moisture. But if these Gentlemen had opened the Frontal Sinus, it is very probable they would have found an Abscess in those Cavities; for most of those Abscesses which find an Exit by the Nose, do not proceed from the Brain, (since there is no passage from thence,) but are discharged from the Cavities of the Eye-brows or Checks.

C H A P. XXII.

Of the *Fistula Lachrymalis.*

THIS Operation is an Incision made near the greater Angle of the Eye, to discharge the Pus in a *Fistula* of that part.

THE CAUSE. The Tumour proceeds from a sharp Saline Humour, which flowing through the Lachrymal Ducts, corrodes and tumefies the small Caruncle seated in the greater Angle of the Eye, from whence it comes to pass, that the Tears finding no passage into the Cavity of the Nose, through the perforations made in the Lachrymal Bone, they must of necessity run down the Cheek, while on the other hand, the Acid and Corrosive parts of the Lachrymal Humour, excoriate the Caruncle, and form an Ulcer, which soon degenerates into a *Fistula*. The Corrosive Serum is not confined to the Gland, but very often extends its malign effects farther, and Caries the Bone, which hapning makes the Operation absolutely necessary. However, we must not imagine that the Lachrymal Humour is ever the Original of this Malady; for sometimes there happens to be an Abscess or Inflammation in the Lachrymal Gland it self, without the *Lympha's* being in any manner concerned in it. When this happens, there is Pus always lodged in it, which is ever discharged through the Nostrils, when the Patient squeezes the place, as most commonly they do once a day, to avoid the Pain and Trouble of the Operation. If the Patient be careful to discharge the Pus in this manner, the Tumour often do's not encrease, and it may remain his whole Life-time, without any notable inconvenience.

THE SIGNS of a *Fistula Lachrymalis*, are an involuntary flowing of the Tears down the Cheek, which notwithstanding is no certain proof, since a simple Obstruction or Inflammation of the greater Angle of the Eye, may suffice to produce this effect. The infallible Mark of a *Fistula*, is a Pus flowing out of the corner of the Eye, or by the Nose. If the Bone be not corrupted, the Cure may be more easily accomplished.

In Searching to find whether the *Fistula* terminate in the Bone or not, observe if there be a hard Substance which resists the Probe, without any Pain at all; for in this Case it is evident the Bone is bare, since if the *Periosteum* cover'd it, the Sense would be exquisite, and the Probe cause great pain. If the Bone be smooth and even, and the *Pus* which comes away be neither thick nor Oily, it is a Mark that it is sound; on the contrary, if the Bone be rough and uneven, it is Carious.

THE OPERATION.

Place the Patient in a Chair, and let his Head be kept steady by a Servant, then bind up the Sound Eye to prevent his seeing the Instrument, and make a Semicircular Incision with a Knife on the Tumour. In doing this, be cautious of cutting the Eye-lids, for this would cause a deformity never after to be removed. Try with the Probe, whether the Bone be carious in order to dilate the Wound; for if the *Caries* extend beyond the Incision, you must open farther with the Lancer, or a Sponge-Tent to lay the *Caries* bare.

If after Incision you find the Bone carious, the Actual Cautery must be applied. When Inuision is necessary, place a Probe on the Bone, and on this a *Cannula* or Pipe, which in its upper part is made after the form of a Tunnel, take out the Probe, and introduce an actual Cautery into the *Cannula*, and pass it lightly over the Cariosity. The use of the *Cannula* is to direct the Cautery, and prevent it from burning the adjacent parts.

It is common to pierce the Lachrymal Bone thro' with the Cautery, but this seems to be needless; because this Bone being corrupted by the *Pus* lodged in the *Fistula*, and by the Air and Medicines applied to it necessarily exfoliates, and being very thin comes away entire, and so leaves a hole on the side of the Nose.

THE DRESSING. After the Operation is over, fill the Wound with small Dossils of dry Lint, and lay on a dry Pledgit, a small Emplaster and Compress, and keep on all with the Bandage.

The most plain and simple Bandage, is made with a Handkerchief folded Diagonalwise, or form of Triangle. Take this in both Hands in the middle with your Thumbs on, and your fingers under it, pass it behind the Head, and apply

ply its middle on the Eye, slide your Hands on the Handkerchief behind the Head, and engage it there with the two other ends, which you must bring before, pinning them where they end. This Bandage is proper for all parts of the Head.

Another Sort of Bandage for the Head, may be made after this manner. Take a Roller two Ells in length, and an Inch and a half broad, apply the end of the Roller obliquely on the Parietal Bone, pass this over the part affected, descending on the opposite Cheek, and so passing behind the Head, and then again over the Eye affected, making three rounds in the same manner as the first; then bring it several times round the Forehead, and lastly fasten it.

If there be occasion to bind up both Eyes, you must proceed in this manner; take a double-headed Roller an Inch and a half broad, and four Ells in length, apply the Roller behind the Head, then bring each end of it over each Eye; crossing it on the Nose, next descending over the Cheeks, pass behind the Head, returning on the same Rounds of the Roller made the first going about the Head; then bring the two ends of the Roller about the Forehead, and continue your Rounds about the Head, till the Roller is spent, and then fasten it. These last Turns of the Roller about the Head, stay the first made on the Eyes.

THE CURE. Let the Patient lie on his Back, that by this means the Tears may pass off by the Orifice that you have made. The Curiosity of the Bone, and the *Callus* of the *Fistula*, must be both entirely destroyed, before the Wound is capable of being cured; and therefore the Superfluous Flesh must be consumed with some effectual Caustick.

The Cure of a *Fistula*, principally consists in consuming the *Callus*, and after that is remov'd healing the Ulcer; for this purpose if necessity require, you must enlarge the Orifice of the *Fistula* by Tents made of *Elder Pith*, *Roots of Birthwort*, or *Sponge prepared with Wax*. Dried *Gentian* Root alone is good, or the same smear'd with some emollient Unguent. This Root has two good effects, when it is armed with some emollient Unguent, *viz.* It softens the Callosity, and widens the Mouth of the *Fistula*, and when it is drawn out, is commonly Swoln to twice the size it was when put in. To make this more effectual, you may sometimes strew on it *Burnt Alum*, by which means you may dilate and consume the Callosities at once.

When the Callosities are removed, and the Exfoliation and Suppuration compleated, cleanse the Ulcer with Detergent Injections made of *Spirit of Wine*, *Juyce of Tobacco*, the *Exuvia of Serpents powder d*, or *Hydromel*. The following Medicine is good, *R. Honey of Roses* ℥ij. *Spirit of Wine* ℥℥. *Sweet præcipitate* ℥℥. Mix these and inject them. The Dose of *Præcipitate* must be encreased or lessened, as Circumstances shall require. *Plantane Water with Mercurius Dulcis mixed*, is very good to make warm Injections with. *Juice of Crabs pounded with Leaves of Tobacco*, and after prest out and mixed with *Mercurius Dulcis*, is an excellent Mundificative; and *Mercury* mixt with *Vulneraries*, is one of the best Detergents in the World. The following Medicine successively Deterges, Consolidates, and Cicatrizes all sorts of *Fistula's*, without having recourse to actual Fire. *R. Clarified Honey* ℥ij. Boil it to a *Viscid Consistence*, and when it begins to cool, add to it *Aloes*, *Frankincense well Powder d*, ā. ʒi. *Assafætida pulverised*, ʒ℥. beat these together very well for a considerable time in a Mortar, to the consistence of an Unguent.

Before I leave this Subject, I shall present the Reader with *Hildanus's* process in curing a *Fistula Lachrymalis*, in the left Eye of a Child of 13 years of Age, which he had had for four years. This was reputed incurable; for not only the Bone was Carious, but the *Lachrymal Gland* was so corroded, that the Tears ran plentifully through the *Fistula*, when the Child cryed, who was very Refractory, and would not suffer the Actual Cautery to be applyed. In the first place he prescribed a good *Regimen*, purging the Patient with Medicines adapted to his Constitution. Next he applyed a Seton to his Neck; after the Seton had discharged it self for some time, he applyed a Potential Cautery on the Seton, to enlarge the Orifice, which was very streight. After the Escar was separated, he dilated the *Fistula*, and laid it open quire to the Bone with an Escarotick Unguent, and Sponge Tent, and filled the *Fistula* with powder of *Euphorbium*, applying over it an Emplaster made with *Gum Elemi*, without any other Mixture. In this manner he continued to treat the Patient for seven Weeks; after which the Bone exfoliated, and when this was effected, he put some few drops of good Balsam with Lint into the Wound, which soon after healed, and the *Fistula* was entirely cured. Sometime after he took off the Seton and cicatrized the Wound. *Fabr. Hildanus*, sets a great value on powder of *Euphorbium*, in the Cure of *Fistula's*. There

There is another Method of curing these *Fistula's*, delivered by *Hildanus*, *Cent. 6. Obs. 3.* He begins the Cure by an exact Diet, then purges off the most predominant Humours; next he fortifies the Head with Medicines, both Internal and External. The Internal are Decoctions of *Gua-jacum*, *Sarsaparilla*, *Sassafras*, *China*, *Betony*, *Sage*, *Rosemary*, *Marjoram* and *Primroses*. Conserves of *Betony*, *Rosemary*, *Sage*, *Primrose*, *Piony*, Confection of *Alkermes*, *Citron Peel*, and other of the like Nature.

The External are Powders of *Benzoin*, *Syrax Calamita*, *Mastic*, *Olibanum*, *White Amber*, *Grains of Kermes*, *Roots of Iris Florentina*, *Flowers of Betony*, *Rosemary*, *Marjoram*, *Red Roses*, which are to be strewed on the Head, or applied with quilted Caps.

Next he makes revulsion of the Matter, which discharges it self on the Eye; for which purpose he commends Cupping-Glasses applied to the Shoulders, and Vesicatories behind the Ears. Setons are of more use still, because they potently attract the Matter, which otherwise would make its way to the *Fistula*, and purge and strengthen the Head. He assures us, Setons are of so great importance in the Cure of *Lachrymal Fistula's*, that many times it could not be effected without their Assistance. Before the Seton be made, the Body ought to be very well purged, and the Seton ought to run for some time, before you proceed to the Cure of the *Fistula*.

After these Preparatives, the Wound must be dilated with a piece of *Gentian Root*, prepared *Spunge*, or some good Caustick. The Patients Eye must be kept very close, and very well guarded when Causticks are applied, to prevent their running into it, when they begin to melt; some Authors open *Fistula's* with one or two drops of Oyl of *Vitriol*, or *Aqua Fortis*, and consume their Callosity with these Causticks; but this Practice is to be condemned, because the sound Bone is corroded, and damaged by these Acid Liquors.

After the *Fistula* is laid open, Dossils with *Præcipitate* prepar'd, ought to be put into the Wound, and over them an Emplaster with *Gum Elemi*. This Powder must be put into the Wound once or twice a day, according as the Ulcer is more or less moist, and it is best to dress it but once a day. It is not convenient at first to search the Wound with a Probe, to discover if the Bone be carious or not, it suffices to put the preceding Powder into it, for this will

will easily waſt the redundant Fleſh, and if the Bone be found, it will cleanſe and Cicatrize the Ulcer without effecting that.

If the Bone be Carious, it muſt be laid bare as far as is poſſible, and filled with *Euphorbium*, in fine Powder; this is the beſt Remedy in the World againſt a Carioſity, and there is no reaſon to apprehend its exceſſive Acrimony. But obſerve here, Powder of *Euphorbium* is never to be mixed with common Oyl, according to the abuſive practice of Apothecaries; for this obtunds its Virtue and Strength, beſides common Oyl is injurious to the Bones, as well as the Acid Spirits of *Vitriol*, *Sulphur* and *Aqua Fortis*. Some Practitioners in Carioſities of the Bone in Lachrymal Fiſtula's, make uſe of the Actual Cautey, but Powder of *Euphorbium* is preferable.

When the Ulcer is ſufficiently deterged with Powder of *Præcipitate* well prepared, and the Fleſh almoſt grown up, ſome good Baſam may be applied to make a fair and ſmooth *Cicatrix*: And in the time of Dreffing, ſome Drops of the following *Collyrium* muſt be put, three or four times a day, into the Eye. *R. Plantane and Roſe Water* $\bar{a}$ 3iſſ. *Water of Eye-bright and Valerian*, $\bar{a}$ 3i. *Seeds of Quinces reduced to Powder* $\mathfrak{z}$ i. Mix theſe, and leave them to infuſe 7 or 8 Hours, then ſtrain them, and add to the *Liquor Turky* prepared, *Lead calcined*, *Burnt Harts-horn* prepared, $\bar{a}$ 3i. *Camphire*, $\mathfrak{z}$ i. Mix theſe very well in a Mortar, and make a *Collyrium*, which is to be applied very Hot. Obſerving this Method, the Patient (our Author assures us) by the Bleſſing of God may be cured.

REMARKS.

Fab. Hildanus, Cent. 2. Obſ. 14. tells us, that a young Man happening to have a Vein in the inner Angle of the Eye opened, a great Flux of Blood enſued, which proved fatal to him.

CHAR.

C H A P. XXIII.

Of Cataracts.

THIS Operation is a *Punction made in the Globe of the Eye, with a Needle to deprefs a certain Opake Membranous Concretion which covers the Pupil, and hinders the Transmiffion of the Rays of Light.*

THE CAUSE. Authors who pretend to assign the Causes of Cataracts, differ very much in their Opinions; some conceive, they are no more than an Obstruction of the pupil, made by the Viscosity of the Aqueous Humour, which is inclofed between the *Cornea* and *Uvea*; others believe it is a small Webb, spread before the Chryftalline Humour. Others again imagine it is a small Film, which separating it self from the Chryftalline floats in the Aqueous Humour, and are perfwaded that all the Parts are exiftent in the first Conformation, that *Cyftis's* are never formed *de novo*, but are only Membranes difengaged from the Neighbouring parts, which encreasing in thicknefs, receive nourifhment from the Parts, to which they adhere. This Opinion they pretend to confirm, by observing that Cataracts are a Texture of feveral pellicles or thin Films, applied over one another, which may be eafily difcovered when the Cataract is Ripe. They farther pretend to evince, that a Cataract in only a Membrane difengaged from the Body of the Chryftalline, becaufe if it be deprefsed after it is perfectly formed, the Chryftalline Humour is deprefsed together with it. And they endeavour to perfwade us, that by this means the Rays of Light wanting that due Modification in the Chryftalline Humour, which is required for diftinct Vifion, all Objects appear ~~confused~~ after the Cataract is couched, and the Patient is obliged to wear Spectacles.

THE SIGNS. If the Cataract be black, yellow or leaden, it is for the moft part incurable. Its thicknefs and adhefion, is the reason why in making the Operation, there happens a Laceration of the Pupil, and this being disabled from constringing and relaxing it self, all the Rays of Light which enter the Eye, ftrike on the *Retina* in a diforderly manner, and make a confused Vifion.

Blue and Greenish Cataracts, or such as are of the Colour of Pearl or burnished Iron, are Curable by Couching them with the Needle.

When there is no perceptible Motion in the Pupil, it is a sign the Cataract is fixed to the *Uvea*; this is inseparable from old Cataracts, and such are not to be medled with.

The way to find whether the Cataract be firm enough to admit of Operation, is this. Put a Convex-Glass, or a Viol of Water before the Patients Eye, and behind this set a lighted Candle. If the Patient can discern any Colours through these, it is a sign the Cataract is not Ripe, but if he can not, it is time to depreß it.

Cataracts hapning after Fevers and violent Headachs, are difficult to Cure. Cataracts are more easily cured in Children, than in grown Persons.

Cataracts in their beginning, when Objects seem to appear as through a Cloud, are called Suffusions. Some Cataracts have the consistence of Parchment, and these have an Elastick quality, and when they are depreßed spring up again, cover the Pupil of the Eye, and frustrate the Operation.

THE OPERATION.

When you are well assured the Cataract is in a condition to admit of it, proceed to the Operation. The Spring and Autumn being the most temperate, are for that Reason the most proper Seasons for this purpose. When you undertake this, chuse some fine Day, bind up the Patients sound Eye, and then place him in a Chair with his Face turned toward the Light; your self sitting on a Seat directly before, and something higher than him, and a Servant being placed behind to keep his Head on his Breast. When all things are dispos'd in this manner, bid the Patient turn the Eye affected towards his Nose, that so the *Tunica Conjunctiva* may be more apparent. Then take a haisted Needle, some of which are Flat, some Round, some Three-corner'd, and with this pierce the Conjunctive Tunick close to the *Cornea*, on the same side with the lesser Angle of the Eye. But observe here, carefully to avoid hurting the Vessels of the *Conjunctiva*. When the Needle is in, you must boldly thrust it to the middle of the Cataract, and keep it depreßed below the Pupil. If the Cataract do's not spring up again, the Operation

tion is well performed ; but if it do's rise, you must keep it down with the Needle, till it is entirely subjected.

The Needle must be of well polished Steel, and before you thrust it into the Eye, you ought to pass it through a piece of Woollen Cloth, or the Brim of a Hat. This smoothen's it, and takes off any roughness or inequality, which might put the Patient to pain.

When the Needle is drawn out, you must close the Eye-lids, and not present Objects as some do, to try if the Patient can discern them ; because the Cataract as yet not being secured in the place where it is lodged upon the Motion of the Eye, is apt to rise. Because the too sudden striking of the Light on the Filaments of the *Retina* after a long Disuse, must inevitably prove hurtful to it, and cause Dangerous Consequences.

THE DRESSING. This consists only in applying a Pledgit dipt in a *Collyrium* made of *Plantane* and *Rose-Water*, with the white of an Egg, and over this a Compress kept on with a Handkerchief folded cross-ways, or any of the Bandages used in the *Fistula Lachrymalis*, which have been amply described in their proper places. Observe that the sound Eye ought to be bound up to restrain it from Motion.

THE CURE. The Patient must keep his Bed for three or four Days, after which he may be permitted to rise and repose himself in a Dark Chamber.

R E M A R K S.

In the *Miscellanea Curiosa*, there is a Relation of a Studious Gentleman, who being about to divert himself by playing on some Musical Instrument, one of the strings breaking, the end struck him over the Eye, which caused a vehement Pain : Cooling Ophthalmick Remedies were applied to abate the Inflammation. The Gentleman happening to wake in the Night, found he could see every thing in his Chamber, even to the most Minute Figures in his Pictures and Hangings. The Patient being surprized at this wonderful Accident, shut that Eye which had received the Blow, and found immediately he was in Darknesh. He next shut the sound Eye, and opened the other, upon which he found the Chamber, and all the objects illuminated. Then he called for a Light, but could not bear the strong impression which Objects made on his Eye. This Symptom lasted for several Days, ceasing gradually.

In

In the same Collections, *Obs.* 93. We read of a certain Man, who having the Pox and Venereal Ulcers upon him, and being under Cure for the same, as the Symptoms abated, his Sight was depraved in such a manner, that all Objects appeared double, but the Cure of the Distemper being compleated, he regained his perfect Sight.

R E M A R K S.

Riverius, Cent. 3. *Obs.* 45. tells us, that a very thick Cataract ensuing on an Ophthalmy of a long standing, in a Girl of 8 years of Age, the spot spread it self over a Moiety of the Iris, which at last he cured by a Solution of *Sal Armoniack* in *Rose Water*, letting it stand in a Copper Vessel, till the Liquor had obtained a lovely Blue Colour. The proportion of *Sal Armoniack* ought to be such, as may make the Liquor moderately sharp; and this must be applied with Compresses.

C H A P. XXIV.

Of Delivering Women.

THIS Operation is an *Extraction of the Child, together with the Membranes which contain it, and Placenta, out of the Mothers Womb.*

THE CAUSE of a Bigg Belly, is the Child contained in the Womb.

THE SIGNS which demonstrate Conception, are the mutual Conjunction of the Seed of both Sexes, a more than ordinary pleasure in the Act of Coition; because at that time the Neck of the Womb compresses the Yard more streightly, an agreeable Titillation, and leaping in every part of the Womans Body. However these must not be reputed certain Signs, that a Woman has conceived, since we see every day, that some are impregnated without emission of Seed, or receiving the least Pleasure.

If after Reception of the Male Seed the Womb is close, nothing comes away, and the Mans Yard is not so wet as commonly; this is a sign that there is a Conception, and that the Masculine Seed is retained in the Womb.

A Woman after Conception, feels some small pain round about the Navel, and some working in the lower Belly, which arises from a strong Contraction of the Womb, when it closes it self, which creating a Motion in the Bladder, draws down the *Urachus*, which terminates in the Navel, and this creates a little pain in that part. This Commotion of the lower Belly proceeds, from the Irritation of the *Re-ctum* by the Motion of the Womb which lies on, and is appended to it.

It is observable, that the Internal Orifice of the Womb in Women who have had Children, is not so exactly closed in the time of Conception, as in Women who never had a Child.

The *Nausea*, the loss of Appetite without any visible Distemper, a longing after odd and uncommon things, Sickness and Vomiting continuing for a long time together, Listlessness, Doziness, Frowardness, and ill Humour without a Reason, Pains in the Teeth, to which she was not subject before; extraordinary Spitting, Retention of the Courses, or Evacuation of them at an unusual time, Rising of the Breasts, a Hardness and Pain in them, the Nipple growing hard, and encreasing in bigness a little (because of the Repletion) the encreasing of the little Circle, its brown Colour, the Protuberance of the Navil, the softness and laxity of the Eye-lids, which are difficultly kept open, their heavy aspect with a Yellow Livid Circle round them, the Eyes sunk, their Whites Turbid, a Languishing Look, the Blood let out bad, Emaciation, a big Belly which gradually encreases, all these after Coition are signs of Conception, all which sometimes appear at once, and sometimes only part of them.

The Reader ought here to observe, that several of these Signs happen to Maids in a Retention of their Courses; as for instance *Nausea*, Vomiting, though not so frequently, Risings, Hardness and Pain in the Breast and Belly, Appetite to odd and uncommon Things, livid Eyes, their Womb may be closed. On the contrary, Women may sometimes have their Courses the whole time of their going with Child, but not in so great plenty as at other times.

Of the Signs which precede, and accompany a Natural Delivery.

Sometimes the Life of the Mother, as well as that of her

her Child, is endangered by hastning her Delivery, before the Term of her going with Child is compleated.

Cholick Pains arising from Wind imprisoned, and moving to and fro in the lower Belly, which rusting up and down, are not directed to the lower part of the Womb, (as all Throes in a true Labour,) are no Signs that a Woman ought to be Delivered. These Cholick Pains are dispersed by warm Cloths applyed to the Belly, or Carminative Glysters, whereas these augment the Pains in Real Labour. These counterfeit Pains, may sometimes proceed from a Diarrhæa, or the Paroxysm of a Fever.

The true Signs which precede a Natural Labour, and happen within a few Days before, are unusual Pains in the Reins, the Rising of the Belly which was above falls down, which makes the Woman walk with more difficulty than before, and Stimulates her to Urine, because the *Fætus* bears down on the Bladder; Lastly, a Flux of Glairy Humour from the Womb which humects the Parts, and dilates the passage of the Infant.

The Signs which accompany Labour, are great Pains in the Back and Reins, which redoubling by Intervals, terminate at the bottom of the Belly with repeated Throes. The Woman has a fuller, quicker, and higher Pulse than ordinary; her Face is red, and inflamed by the vehement efforts she makes to help the Birth. The Natural parts are tumefied, because the Infant struggles to get out; and if Vomiting Supervene, it is a sign that the Child will soon be born. This Vomiting arises from a certain Sympathy, between the Womb and Stomach, because of the Communication of Nerves between those parts.

When the Delivery is near, there happens a Universal Trembling, especially in the Thighs and Hamms, a general Heat, and the Humours which then come away, are often tinged with Blood. The Internal Orifice of the Womb is open, which may be felt with the Finger, and the Membranes containing the *Fætus* present themselves; These appear harder and tenser, according as the Pain is more or less Vehement. The Pains continuing the Membranes break, and the Waters come away, and the naked Head of the Child presents it self to the Orifice.

When all or most of these Signs appear, it is certain that the Woman is near her Delivery, whether she have compleated her Term or not.

The OPERATION.

When you perceive by the abovementioned Signs, that a Woman is really in Labour, take care that neither her Cloaths, or any thing else be about her Belly, which may streighten it; and give her some pretty strong Clysters before the Child be in the Passage, to evacuate the *Rectum*, and provoke the Woman to go to Stool. After this make a Bed for her, if it be Winter near the Fire. The Bed ought to be so placed, that you may commodiously go round it.

If the Woman be full of Blood, take away some of it when the Pulse rises. This practice is useful to free the Breast, to assist Respiration, and prevent a great loss of Blood or Fever after her Delivery. Then let her take some good Broth, or a new laid Egg, and let her walk in her Chamber, and from time to time take a Spoonful or two of Wine not too strong, because all Heady Wines, and strong Liquors, are apt to kindle a Fever. When her Pains take her, advise her to help her Throes.

The Artist ought from time to time, to feel the internal Orifice of the Womb, to discover whether the Waters are not ready to break, which so soon as he perceives, he must anoint the Parts with some Emollient Oyl or Grease, and keep near the Patient to observe all her Motions, Complaints, and Pains, to make a Judgment whether her Delivery be near, without being obliged so often to try the Parts. Let the Patient ever and anon rest on her Bed to recruit her strength, but she must not be suffered to lie on it too long, especially if it be a low Pallet-Bed, because by Walking, the Weight of the Infant dilates the Internal Orifice of the Womb, and the Pains are more vehement and frequent; on the other Hand, she must not be too much Fatigued in her first Pains, for fear her strength be exhausted too soon.

When the Waters present, let them break of themselves if the Labour be Natural, because if you should break them before her Delivery, the Passage would be dry, and more difficult for the Infant to slip through. After the Waters are broken, introduce the Finger into the internal Orifice of the Womb, to try if the Head of the Child present it self, which may be known if it be Hard, Thick, Round, Heavy, and equal, for all other parts would be rough and unequal, hard or soft, according as they differ.

For the delivering the Woman, place her on a Bed covered with a Quilt, and not a Feather-bed, with Linen several times doubled; to receive the Blood and Waters (which come in great abundance from her) and prevent their incommoding her. The most convenient Posture to place her in, is on her Back, with her Head and Breast a little raised, so that she be neither lying nor sitting; for in this manner she will be able to breath more easily, and have more strength to help her Pains, than if she were otherwise, or sunk in her Bed: Being thus placed, she must spread her Thighs abroad, folding her Leggs a little toward her Buttocks, which must be raised by a small Pillow underneath, to the end that the *Coccyx* or Rump-bone may give back; lastly, she must have her Feet stayed against some firm Thing, and hold some of the Assistants by the Hand, that she may better stay her self during her Pains. The Woman must be encouraged to hold her Breath, and bear down her Pains as well and as strongly as she can. Here I must condemn the Practise of some Midwives, who press the Superiour parts of the Belly, to thrust the Child gently down: This bruises the Womb, and hinders the Delivery. The Artist ought to content himself (having, first Anointed his Hand with some Oyls or Greases) to dilate the inner Orifice of the Womb, putting his Fingers up into its entry, and spreading them in the time of her Pains, thrusting by little and little the sides of the Orifice, towards the hinder part of the Childs Head.

When the Head begins to advance, the Artist must seat himself conveniently to receive the Child, and with his Fingers ends endeavour to put back the inner Orifice of the Womb over its Head, and -as soon as it is advanced as far as the Ears, or thereabouts, take hold of the two sides with his Hands, slipping his Fingers under the Jaws, and upon the first great Pain which comes, draw it forth. Here let him take great care that the Navel-string be not entangled about the Neck, or any other Part, least thereby the After burthen be pulled with Violence, and with it the Womb to which it is fastned, and so it cause a Flooding, or break the string. It must also be observed, that the Head be not drawn forth strait, but moving it too and fro, that the Shoulders may more easily make their way, and this must be done without losing time, least the Head being past, the Child be stopd by the bigness and largeness of the Shoulders, and so be Suffocared in the passage. As soon as the Head is born, he may slide his Fingers under the Armpits, and draw out the rest of the Body. When

When the Child is drawn forth, place it on its side with its Face towards you, least the Blood and Waters which follow immediately after, should incommode it, or it may choak it by running into its Mouth or Nose, as they would do if it were laid on its Back.

If the Womans Pains continue after the Birth, and her Belly be big, and putting your Hand into her Body, you find another gathering of the Waters, it is a sign there is a Child still remaining in the Womb. If this be so, you must not endeavour to fetch away the After-birth, till the Woman be delivered of all her Children (because Twins never have but one Burthen, to which there are fastned as many distinct Strings and Membranes, as there are Children) and if it should be drawn forth after the Birth of the first, the rest would run a risk of losing their Lives, and besides it would endanger a Flooding.

For this reason let the first string be cut (being first tyed with a Thread three or four times double) and fasten the other end with a Thread to the Womans Thigh, to prevent the inconvenience it may cause, by hanging between her Legs; and when this is done, break the Membranes of the Child which remains in the Womb to let out the Waters, and draw it out of the Mothers Body, observing the same Circumstances as in the first, after which fetch away the After-birth in the following manner.

How to fetch away the After-burthen.

When the Child is born the Artift taking the String, must wind it once or twice about one or two Fingers of his left Hand (for instance, the Fore and Middle Finger joyned together) the better to hold it, or he may take it in his left Hand, wrapping it in dry Linen, to prevent it from slipping between his Fingers; having done this, let him draw it moderately, and with the right Hand take another hold of it above the left near the Privities, drawing likewise with that very gently, resting the while the forefinger of the same Hand extended, and stretched forth along the String towards the entry of the *Vagina*, always observing to draw it from that side where the Burthen cleaves least. In performing this, he must avoid the Membranes of the Infant, which sometimes hang out after the Birth, and investing the String hinder him from keeping it Firm. But above all things, let him be careful to draw the Burthen gently, for fear of breaking the String,

or drawing down the Womb with it, or causing a Flooding, which would be of dangerous consequence. In the mean time the Woman may blow strongly into her Hands, shut or stop her Nostrils, or she may put her Finger into her Throat, as if she would excite Vomiting, or else strive as if she were going to Stool, bearing down and holding her Breath, all which Motions have the same effect, and serve to loosen the Burthen, and facilitate its expulsion. If this do not suffice, after you know on which side the After-birth is situated, bid an experienced Nurse-keeper press the Belly lightly with the flat of her Hand, bringing it gently downwards by way of Friction: When the Burthen is come away, it must be considered whether it be entire, and if the least part remain behind, so much as the Skirts or any Clods of Blood, the Hand must be put up into the Womb to bring them out.

When the String is broke and the *Placenta* is retained, you must speedily introduce your Hand into the Womans Body, and before the Womb can close (having first anointed it with some Grease or Oyl, and pared your Nails close) bring it away. This is easie to be done, if it do's not cleave to the Womb; but if it do's adhere, you may easily distinguish it from the Womb it self, by the several inequalities in its Surface, and then by trying with your Fingers on which side it cleaves least, begin to disengage it there, thrusting the end of your Fingers between it and the Womb, continuing so to do till it be entirely freed, and then gently draw it out. You ought to be careful in separating the Burthen, to avoid scratching the Womb, for fear of a Flooding, Inflammation or Gangrene, and it is better to leave some part of it behind, than endanger such Accidents.

If the Womb be not open enough to receive the Hand, anoint the Womans Privities, and introduce two or three Fingers, with which apprehend that Portion of the Burthen, which almost always presents it self at the internal Orifice, and draw it gently, and a little obliquely on one side and the other, and so proceed forwards, keeping what you first seized in its Membranes.

If all these Methods fail, and you cannot fetch it then away, you must have recourse to Injections made with Decoctions of *Mallows*, *Marshmallows*, *Pellitory*, *Linseed*, with the addition of Oyl of sweet *Almonds*, *Lilies*, or a bit of *fresh Butter*, these injected into the Womb are proper to suppurate,

suppurate, and so bring it away. Strong Clysters are very Serviceable, because the Patients striving to go to Stool, very much assists the expulsion of the Burthen.

Bleeding in the Foot or Arm is necessary as occasion requires to prevent a Fever; but if the Woman be free from it, good Restoratives may be given her, as Broths made of Veal or Poultreys, with a little Juyce of Orange, or Wine and Water.

Of Difficult and Unnatural Labours.

You may be assured the Child is living if the Woman has received no Hurt, if she has labour'd under no very great inconvenience during the time of her going with Child, if she has enjoyed a good Health, and finds the Infant stir within her.

If you doubt whether the Child be alive after the Waters are broke, pass your Hand gently up into the Womb, and take hold of the String as near the Navel as may be, to feel the Pulse of the Umbilical Arteries, or put the Tip of your Finger into its Mouth, to feel the Motion of the Tongue.

You may conclude the Child to be Dead, if he has not stirred for a considerable time; if there be a Flux of Fætid Matter from the Womb; if the Woman feels great pain and weight in her Belly; if the Womb be not staid, but falls like a Ball, from one side to another, on which ever side she happen to lie, if she have frequent *Syncopes* and Convulsions; if the Navel-string or Burthen, have for some time been out of the Mothers Body; if putting the Hand into the Womb the Child be cold, the Navel have no Pulsation, and the Tongue remain unmoved; if the Head feel soft, and the Bones move too and fro, riding over one another in the Sutures; if the Woman has received any Hurt, or lost a great quantity of Blood, or she be not arrived at her due Term; if the Waters have been broke for a considerable time; if her Face be of a Leaden Colour, her Eyes sunk, her looks faint and dejected, her Breath ill scented, her Breasts decayed, her Belly fallen, without any Waters coming away from the Womb. If diverse of these Signs happen together, there is good reason to believe the Child is Dead.

When the Child presents with the Feet first.

When this happens, the Artist must introduce his Fingers

into the Womb to dilate it by spreading them. When the passage is wide enough, introduce your Hand into the Womb, and if only one Foot present, consider well whether it be the Right or the Left, and so you may better judge on which side the other Foot lies, which you must search for, and so draw forth both together ; but before you proceed thus far, you must be well assured that this is not the Foot of another Child, for you would sooner kill both Mother and Children, than deliver her after this manner ; you may easily prevent Mistakes of this kind, by sliding your Finger along the Leg and Thigh to the Twist, till you find the two Thighs joyned to one Body, and this way has this convenience, that at one and the same time, you find the other Foot in order to bring it away with the former. When one Foot is found, tie it with a Ribbon, that so you may not lose that again, in searching for the other. When both Feet are found, taking them with both Hands above the Ancles, and holding them close together, draw them till the Thighs and Hamms of the Child are come forth ; as soon as the Knees are come out, take hold of the Thighs above them, wrapping them in a Napkin to prevent the Hand from sliding, and then proceed to draw the Child to the upper part of the Breast. Then bring down the two Arms of the Child on the sides of the Body, taking hold of his Hands near the Wrist, rather than in any other place. This is the best way to disengage them in the passage, and here care must be taken to prevent breaking them, by forcing them too much. You must be careful the Childs Belly and Face be downwards, to prevent the Chin from stopping on the Sharebone ; wherefore if it be not in this Posture, you must reduce it, which may easily be done. To effect this, slide the flat of one Hand to the *Pubes* of the Child, and with the other hold the two Feet, turning the Body till the Breast and Face be downwards ; having in this Posture brought the Child to the Shoulders, you must proceed to draw it out in the mean time, advising the Woman to bear down, that the Head may succeed in the place of the Shoulders, and not stop in the passage.

When the Head stops in the passage.

In this Case, put the Childs Thighs into the Hands of some one of the Assistants to draw gently, whilst you by degrees disengage the Head from the Bones of the Passage:

To

To do this, slip one or two Fingers of your Left Hand into the Childs Mouth, to disengage the Chin, and with your Right Hand embrace the hinder part of its Neck above the Shoulders, and so draw it out above. This must be done as promptly as is possible, for fear the Child be Suffocated.

If the stopping of the Childs Head in the Passage, arise from its ill Position, turn the Face downward, sliding the flat of the Hand over its Face to cover its inequalities, for the more easie turning and putting it into a more commodious Situation; but the Head and Body must be turned together, for fear in turning one without the other, the Childs Neck be twisted round. After these Circumstances observed, the After-birth must be fetcht away as before.

How to fetch away the Childs Head when it is separated from the Body, and remains behind in the Womb.

If the Head be small and soft as in Abortions, it may be easily drawn out, but if it be big, the Artist must put his right Hand up into the Womb, and search for the Mouth, and putting one of his Fingers into it, and his Thumb under the Chin, take hold of the lower Jaw and draw it out.

But if the lower Jaw come off from the Head, he must draw his right Hand out of the Womb, and slip in his left, and with this stay the Head; and in his right, he must take a streight strong Hook or Crotchet with one Branch, and slide it all along the inside of his Hand, keeping the point towards it, for fear of hurting the Womb. Having introduced it in this manner, he must turn it to the Head, and strike it into one of the Eyes, or Holes of the Ears or Occiput, or between the Sutures, and so bring away the Head, making way for it with his left Hand: when he has brought it near the Passage, he must withdraw his other Hand, which would be apt to hinder its coming away, however he must leave two or three of his Fingers on the side of the Head, to prevent the Wombs being Wounded by the Instrument, if it happen to lose its hold.

If the Artist decline using the Crotchet, he may take a Fillet of soft Linen, three quarters of an Ell long, and three Inches in Breadth folded double, let him hold the two ends with his Left Hand, and the middle with his Right, being first anointed with fresh Butter, let him introduce the end of

A Compleat Body

this Fillet into the Womb, and pass the middle over the Childs Head, then drawing the two ends of the Fillet together, let him bring the Head out.

If these means fail, the Artist must thrust his left Hand into the Womb, and then slide in a crooked Knife with his Right, with the point turned toward his Hand, for fear of wounding the Womb. When it is in he must turn it to the Head, and make an Incision in that to evacuate the Brain, and lessen its bigness. The Knife must be thrust in with the left Hand to prevent hurting the Hand, and must be small with a long Handle. If the Burthen be loosened from the Womb, it must be brought away first of all; on the contrary if it adheres firmly, the Head must first be drawn forth.

When the Childs Head thrusts the Neck of the Womb out before it.

When this Accident happens, the Woman must not be obliged to walk or stand up, but must be kept in her Bed with her Body lying even, and not so much raised as in a Natural Labour. You must omit giving sharp Clysters, and all such things as may moisten and relax the Womb, and when the Child thrusts forward, the Artist must have one Hand on the side of the Head, to put back the Womb to its proper place, continuing to do this till the Child be born, without drawing the Head as in Natural Births. But if the Child be stopt in the Passage, and be in danger of being Suffocated, he must draw it gently out by the Head, whilst some other Person thrusts back the Womb with his Hands, and when this is done, he must fetch away the Placenta.

When the Childs Head comes first, and cannot come forth, because it is too big, or the Passage not sufficiently dilated.

In this Case the Bearing part must be fomented and relaxed by Oyls and Emollient Greases, and all endeavours used to bring the Child into the World. If these prove useles, and it be certain that the Child is dead, the Artist must no longer scruple to fix his Crotchet into the Head, and so bring it out. Before this be done, let him introduce a Catheter well Oyled into the Bladder to evacuate it, putting the Childs Head a little aside, for the more easie slipping it

in. After this, let him slide the flat of his Right Hand into the entry of the Womb to the side of the Childs Head, and with the left let him introduce a Crotchet, which ought to be short and strong, and in entering it must be turned to the inside of the Right Hand; after it is in, let him turn it and strike it into the middle of the Parietal Bone, and draw it gently till it has taken fast hold; then let him take out his Right Hand, and introducing his Left Hand to guide it, fetch it out with the Instrument. If there be occasion, the Artist may use another Crotchet to the opposite side of the Head, to draw the whole more equally. In the last place (drawing out his Instruments) let him take hold of the Head with both his Hands, to bring out the rest of the Childs Body.

When the Child presents the side of the Head or the Face to the Birth.

To prevent the Childs advancing farther in this Vicious Posture; Let the Woman lie down, and cause her to lean a little on the opposite side, to the Childs ill position, then let the Artist slide up his Hand to the side of the Childs Head, to bring it right. If this do not succeed, he must put his Hand up to its Shoulders, that so thrusting them back a little into the Womb, he may give it a Natural and Convenient Situation, after which he may proceed to deliver the Woman in the usual manner.

If this succeed not, let him search for the Feet, and bring them out first.

When the Child's Head is born, and the Body stopp in the Passage by the Shoulders.

Draw the Childs Head gently, sometimes by the sides, sometimes taking it with one Hand under the Chin, and with the other on the Top of the hinder part of the Head, alternately drawing one side and the other to facilitate the Birth. If the Shoulders cannot pass, slide one or two Fingers of each Hand under the Armpits, and so draw out the Child. If it be stopp by a Hydropick Belly, introduce the Left Hand into the Womb, quite to the right side of the Belly, and pierce that with a Crotchet (for the introducing which, you may make use of your Right Hand) and when the Waters are let out, bring away the Child.

When

When the Child comes with one or both Hands together with the Head.

As soon as this ill Position of the Child is perceived, it must be prevented from proceeding farther. The Woman must be placed on her Bed, with her Hipps raised a little higher than her Head, and the Artift must put back the Childs Hand, guiding it as much as may be, to give way to the Childs Head, which having done, if the Childs Head be on one side, it must be reduced to its Natural Posture in the middle of the Passage, and so brought away as in ordinary Births.

When the Child presents one or both Hands foremost.

The Hand or Arm must be thrust as speedily as may be into the Womb, and the Artift must introduce his Hand under the Childs Breast and Belly so far, till he finds the Feet, which he must gently pull towards him to turn it, and draw it forth, observing to do this with as little Violence as may be.

In introducing the Hand into the Womb, observe to slide it within the Membranes, that so it may turn more easily without hurting the Womb.

If the Arm come too far out, and cannot be put in without great difficulty by reason of its bigness, and it be certain the Child is dead, it is then advisable to take it off as high as is possible, beginning with an Incision around it, and cutting through the Bone with sharp Pincers, as is practised by *Ambrose Parvè*. But I think it better to twist it once or twice round; for by this means it will easily separate from the Body in the Articulation, and there will be no danger of hurting the Womb by the Asperities of the Bone.

When the Child presents Feet and Hands together.

When the Womb is sufficiently dilated, let the Artift slide his Hand into it far enough to reach the Childs Head, and put back that together with the Hands, to the bottom of the Womb, leaving the Feet in the same place where he found them, to draw the Child forth by.

Observe that whenever the Child or any part of it is to be thrust back into the Womb, the Woman must have her Hipps raised.

When

When the Child presents with the Knees first.

It must not be suffered to advance far in this Posture, wherefore having placed the Woman aright, put back the Childs Knees, and to unfold its Legs, put one or two of your Fingers under the Ham, directing them by little and little all along behind the Leg, until you reach the Foot, that so having disengaged one, you may do the same to the other, proceeding in the same manner as with the first; after which having brought both together, deliver the Woman in the same manner, as when the Feet present first, observing to bring the Face of it downward, and such Circumstances as are noted where we treat of that Labour.

When the Child comes with the Shoulder, Back or Breech.

The Artist must thrust the Shoulder a little back, that so he may have the more liberty of introducing his Hand into the Womb, then sliding it along the Childs Body on the Belly or Side, as he finds it easiest, and searching for the Feet, he must turn it and bring them to the Passage, and so deliver the Woman.

If the Back present, he must slide his Hands along it towards the lower part, till he finds the Feet, and then draw it forth, as if it presented with the Feet first.

If the Child come with the Breech first, he must gently thrust it back, and sliding up his Hand along the Thighs to the Legs and Feet of the Child, he must bring them gently one after the other forth of the Womb, by folding, stretching, turning and drawing them gently towards the side on which it comes easiest, being careful not to wind them too much, or cause a Dislocation, and then let him draw forth the rest of the Body, as if it came with the Feet foremost.

If the Childs Buttocks happen to be so far engaged in the Passages, that it is impossible to thrust it back, the Artist must draw it out in this Situation, by sliding one or two Fingers of each Hand on each side of the Buttocks to make his way to the Groin, with as little Violence as may be, and then having crooked them inwards, let him draw the Breech just out to the Thighs, and so by drawing and wagging from side to side, he will disengage them from the Passage, as also the Legs and Feet one after another (being careful

not

not to Dislocate any part) and then he may extract the rest as before, when coming with the Feet.

When the Child presents Belly, Breast or Side.

When the Child presents the Breast or Belly, let the Artist slide gently the flat of his Hand (being first well anointed) towards the middle of the Childs Breast, and thrust that back to turn it, then let him slip up his Hand under the Belly till he finds the Feet, and bring them to the passage to draw it forth, observing always to turn it, so that the Breast and Face may come downwards.

When the Child presents the Side, the Artist must thrust back the Body of the Child, and introduce his Hand into the Womb, sliding it along the Thighs till he has found the Leggs and Feet, and then turn it and draw it forth.

If several Children present to the Passage together, the Artist must carefully heed which Member belongs to each Child; for fear he draw them both at once; if two or three Feet come forth, let him take two, *viz.* one Right and one Left, and slide his Hand along the Legs and Thighs up to the Twist if forwards, or to the Buttocks if backwards, to find if they belong to the same Body, and when he is certain of this, let him thrust back the Foot of the other, to facilitate the Passage, and draw forth the nearest, observing the same Circumstances as when the Child presents with the Feet first, remembering likewise not to fetch away the Burthen, till the Second Child be born; for sometimes there is but one common *Placenta* to both Children, which being separated from the Womb, would cause a great Flooding, and be apt to incommode the Operator, nor can any remedy avail to remove this, till the Woman be delivered of both her Children.

When one Child is come away, the Artist must tie the Navel-string and cut it, and after that is done, bring away the other Child by the Feet, and fetch away the Burthen as in a Natural Delivery.

If the Child present any other part besides the Feet, the same Method must be used, which is above directed in each different Situation, observing to draw forth that which is farthest advanced in the Passage.

When the first Child is come away, and the Waters of the second are not broken, the Membranes must be torn with the Fingers to let them out, because the Passage being dilated

dilated by the Birth of the First; the Second will come away without any difficulty.

When the Navel-string comes first.

Let the Woman be laid very warm in her Bed, and the String replaced in the Womb as soon as is possible, to prevent its cooling. The Artist must endeavour to put it back behind the Childs Head, and keep it there with his Fingers till the Head be fully come forth, which will hinder the coming down of it again.

If it be necessary to draw the Hand out of the Womb before the Head be past, let him put a very fine Rag between the Head and the side of the Womb, to stop the place where the Navel-string passed, leaving one end of the Rag without, to draw it out when he pleases; and let a Compress dipt in Wine well warm'd be applied externally to the Womb, to defend the Navel from the injuries of the external Air.

But if the String yet come forth upon every pain, then without further delay let the Artist bring the Child away by the Feet, which he must search for, though it should come with its Head; and let him gently thrust that back, provided it be not too far advanced; for in this Case it cannot be done without great Violence, Pain and Hazard of the Womans Life.

To search for the Feet, let him slide his Hand on the Childs Breast and Belly, and when he has found them, turn the Child and draw it out. When the Navel-string comes first, the Child must be Baptized immediately after the Birth, if it be not already done whilst it remains in the Passage.

When the Burthen presents first, or is come away before the Child.

When the *Placenta* presents first, nothing can be felt but a soft Body; there is a Flooding and concremented Blood comes away, and the Woman faints.

When this happens, the Woman must be delivered with all Expedition, and if the Membranes are not broken, the Artist must put a little on one side that part of the Burthen which presents, and break the Membranes with his Fingers, and let out the Waters, and turn the Child at the same time,

This only regards Persons of our Authors Religion, viz. Roman Catholics, who hold unbaptized Infants are excluded Heaven.

if it be in any other posture than with the Feet foremost, and draw it forth immediately.

But if the Burthen be almost come forth, and the Membranes broke, he must bring away the *Placenta* before the Child, nor amusing himself with tying and cutting the string before he draws out the Child, to prevent losing one moment of time in delivering the Woman, because the Infant is in great danger of losing its Life, and the Mother has a continual Flooding.

When there is great Floodings and Convulsions in Labour.

The best Remedy in this case, is to deliver the Woman immediately, without the least delay, fetching away the Child by the Feet; if the Flux of Blood be very moderate, and nothing else require it, you must not forward the Labour, and the Woman may go out her Natural Term.

If the Membranes are not broke when the Flooding appears, they must be torn as soon as the Womb is a little dilated, because the Burthen is fixed to those Membranes, and these being extremely agitated and moved by the Pains of the Mother, the *Placenta* must consequently be moved, and a Flux of Blood ensue. If a Convulsion happen, the Woman must be delivered immediately. This is the best expedient in this case, for the saving the Lives of both Mother and Child, if the Womb be open; but if it be not, then let the Artift have recourse to the usual Remedies; for instance, Bleeding in the Arm or Foot (if the Accident arise from Repletion) giving sneezing Medicines or Clysters to cause Throes and dilate the Womb, in the mean while humecting it with Emollient Fomentations.

To deliver the Woman let the Waters be broke, and the Child drawn out by the Feet, unless its Head be engaged in the Passage, and then fetch it by that. If the Child be certainly dead, let it be drawn out with the Crotchets, as was before directed.

When the Child is Hydropical or Monstrous.

If the Dropsie be in the Head, let the Artift gently introduce his left Hand, on the right side of the Childs Head, which he will perceive to be very big, and the Sutures separate from each other; when he finds this, let him with his right Hand slide a crooked Knife all along the inside of
his

his Hand, with the point turned towards his Hand, for fear of hurting the Womb, and having conveyed it very near the Head to the place of the Sutures, turn it in that place, and make a sufficient aperture to let out the Waters, and draw forth the Child. The same Method may be used to let the Water out of other tumefied Parts.

But if the Child be of any Monstrous Figure, or too big, or two grow together, they must be dismember'd, without which it is impossible to fetch them out of the Womb. To perform this, let the Artist introduce his left Hand into the Womb, and conveying in the crooked Knife to the parts he intends to separate, let him cut them off as near the Joynt as possible. If two Bódies are joyned together, let him separate them in the place of their cohesion, and draw out one after the other by the Feet.

When the Infant is dead in the Womb.

Give strong Clysters to the Woman to excite her Throes, and then deliver her as soon as is possible. In order to this, evacuate the Bladder of its Urine, and if the Child present with its Head first, thrust it back, and introduce the Hand into the Womb, sliding it under the Childs Belly, and search for the Feet, and turning it by them, draw it forth, as we have so often directed. But here the Artist must have an especial care that the Head do not remain behind, because the Child is most commonly rotten; and when this happens, it must be drawn out in the manner above directed.

If the Head be too far advanced in the Passage, it may not be thrust back for fear of doing Violence to the Womb, but the Child must be drawn forth fixing Crotchets in his Head, and proceeding after the manner we have elsewhere described.

If the Dead Child present an Arm, bring it away from the Body by twisting it once or twice round, and do the same in other parts of the Body; and after the Child is thus brought away, collect all the parts of the Body, and compare them to see if any be missing. Observe here to avoid using Crotchets, though you are certain the Child is dead, if it can possibly be brought away by any other means; because the Assistants and Midwives are most commonly very censorious in this case, and will not fail to impute the Childs Death to the Artist.

Of a Mole and False Conception.

A Mole is a Mass of Flesh without Bones, Joynts or Distinction of Members, or any regular or certain Figure, Moles have no Burthen or Navel-string, but adhere to the Womb, and draw Nourishment from it, and are sometimes contained in Membranes. If Women cast them before the second or third Month, they are commonly called false Conceptions, and Moles if they are retained in the Womb for a longer time and grow larger.

There is little difference in the Signs to enable us to distinguish between a Mole and false Conception; except that the Belly in Women who have Moles, is harder and more painful, and appears equally extended on all sides, not rising to a point before, and tumefies sooner than if she were really with Child. Moles are void of Life and Motion, are not encompassed with Waters, and attended with more inconveniences, than a Natural Conception, and the Woman has no Milk in her Breast, tho' she can press some Secretories out of them.

When you are assured the big Belly do's only proceed from a Mole, try to bring it away as soon as is possible, giving the Patient some Purgative Medicines, in case there be no Fever or Flooding; and when these begin to operate, give a sharp Clyster to excite her Throes, and when the Womb begins to dilate, relax it with Grease and Emollient Oyls. Bleeding in the Feet, and half Baths are very serviceable in this case.

If a Mole be not too large, or adhere too firmly to the Womb, it will come away without the Assistance of any Remedies; but if it cleave strongly, or be exceeding large, when the Womb is sufficiently dilated, the Artist must slide in his Hand and fetch it out, or make use of a Crotchet or sometimes a Knife, to divide it into pieces.

If the Mole cleave to the Womb, he must separate it from the part with his Fingers, which he must by degrees insinuate between them, beginning in that place where it adheres least, and proceeding till it be entirely loosned, having great care to have his Nails pared close, for fear of hurting the Womb.

If it be a False Conception, slide one Finger into the Womb, and bend it on one side and another, till you can enter a Second and a Third, or a Fourth, and then taking

it between the Fingers, fetch it away together with the concreted Blood ; and if no Portion happen to remain behind, the Flux of Blood will soon cease. But if the Orifice be so small, that the Artift cannot possibly introduce more than one Finger, let that be the Fore-finger of the Right Hand, and let him thrust that as far as he can, and turn it about to loosen the False Conception from the VVomb, and bring it away with the Finger ; and if he cannot do this, let him make Injections into the VVomb to suppurate it. The Flooding will undoubtedly cease, if no part of the Conception be left behind : But if the Internal Orifice cannot be more dilated than is mentioned, and the Flooding be so violent as to endanger the VVomans Life, the Artift having introduced the Fore-finger of his Left Hand, must take with his Right a Cranes Bill or *Forceps*, and sliding this along his Fore-finger, extract the Unnatural Body in the VVomb, taking care not to pinch the VVomb it self, which he may prevent by guiding the Instrument with his Finger.

What is fit to be done to a Woman newly laid, and her Child.

THE DRESSING OF THE MOTHER. VVhen a VVoman is Delivered, lay to her Privities a Closure of Linen six or seven times doubled, to prevent the cold Air from entering her Body, which would shut the Vessels, stop her Cleansings, and create bad Accidents ; as Fevers, Pleurifies, Inflammations, &c. Let her Bed be well warmed and covered with Clothes several times doubled, which must be changed upon account of her Cleansings, but first those must be removed, which received the Child in her Labour. As for her Posture, place her in her Bed with her Head and Body a little raised, to give way for her cleansing and free breathing, and let her pull down her Legs and Thighs close by one another, with a little pillow under her Hams ; and let her lie on her Back, that so the Womb may resume its Natural Situation. After the Closure is removed, let an Anodyne Cataplasme be applied, made of two Ounces of Oyl of Sweet Almonds, with the *Whites* and *Yelks* of two New-laid Eggs, beat and stirred together with a Spoon over warm Embers, till it be of a due consistence. Let this Cataplasme be applied hot, and continued on for the space of three or four Hours, renewing it if there be occasion ; it appeases pain in the bearing part after Labour.

In the next place make a Decoction of *Barley, Linseed, Chervil, Marsh-mallows, and Violet Leaves*, and with this foment the part three or four times a Day, for the space of five or six Days together, to cleanse the Privities from Clods of Blood, and other Filth which proceed from the Cleanings.

Nurse-keepers lay a Compress of a Triangular Figure, four or five times double on the Belly, to bear up the Womb as they pretend, and two others rolled up on each side, to keep it directly in the middle; then lay a square Napkin all over the Belly, and after that Swathe it with another Napkin three or four times double, and about a quarter of an Ell broad. But the Belly ought by no means to be compressed for the first fifteen Days, and if it happen to be so, the Bandage must be removed, to anoint it well with *Oyl of Sweet Almonds*, but after that time it may be a little streightned, to contract and keep the parts together.

If the New-laid Woman intend to Suckle her Child, lay a soft and fine Cloth on her Breasts to keep them warm, and prevent the Milk from Curdling. If the Milk begin to come too plentifully into them, embrocate them with a Mixture of *Oyl of Roses and Vinegar*, and lay on them a fine Compress dipt in it.

After the Cleanings are finished, strengthen the Womb with a Decoction of *Provence Roses*, and *Roots and Leaves of Plantain* in *Smiths Water*. After that use this astringent Lotion to close the Parts. ℞. *Pomgranate Peel, Cypress Nuts*, ā ℥i℥. *Seal'd Earth*, ℥℥. *Provence Roses*, ℥i. *Roch Alum*, ℥ij. Infuse these Ingredients for the space of a Night in five half pints of *Claret* alone, or diluted with *Smiths Water*, (least the Wine alone be too sharp) boil all till it be reduced to a Pint, then strain it, and express it strongly, and with this foment the Parts well Night and Morning.

THE DRESSING OF THE CHILD. Put the Child into a warm Blanket, and take a brown Thread four or five times doubled, of a quarter of an Ell long, with a knot at each end to prevent its entangling. This Thread and a pair of Scissars, must ever be in readiness against the time of Labour; then tie the Navil-string with this Thread about a Fingers breadth from the Belly, and make a double knot, then turning the Thread round the Navil, make two other knots on the opposite side, and so cut the string about
a Fingers

a Fingers breadth more beyond the Ligature towards the *Placenta*. The Ligature must be so close that no drop of Blood may pass it, but not so strait as to cut the Navil.

The end of the Navil must be wrapt round with a small Rag, dry or dipt in *Oyl of Roses*, and another doubled Rag laid on the Belly on the upper side, to repose the Navil on with a Compress over this, and these lesser Dressings kept on with a Swathe of three Inches broad, roll'd round the Body. The Navil-string dries and separates near the Belly, within five or six Days or thereabouts.

Let the Childs Body be cleansed with *Wine* and warm *Water*; especially the Head, Groin and Armpits, and wiped with soft Rags, or a Sponge dipt in *Wine* lukewarm, or if the Excrements be very tenacious, in *Oyl of sweet Almonds*. Let the Nostrils and Ears be unstopt with little Tents, and the Eyes wiped with a soft dry Rag.

When the Childs Body is cleansed from all the adhering Filth, view it well to see if no part be dislocated, and all the Passages be open for the voiding its Excrements; and if they do not come away, give him by the Mouth some *Syrup of Violets* or *Roses*.

After the Child is cleansed, cover his Head with a little Linen Biggen, with a Woollen Cap over that, but observe first to place a Compress on the openness of the Sutures, and pin it without. Behind the Ears put Rags to dry the Filth, and then lay other Rags on the Breast, and in the Folds of the Armpits and Groin; and so Swath him in his Linen and Blankets well warmed, binding him lightly on his Breast and Stomach. The Arms and Legs must be wrapt in the Blanket, and kept streight lying by each other, with a little of the Blanket between to prevent them from Galling, by rubbing against each other, and the Head must be kept steady with a stay fastned on each side the Blanket.

How a Woman ought to govern her self during her being with Child.

The Air in which she breaths must be Temperate, and if it be not so by Nature, it must be reduced to due temper by Art, warming if it be too cold, or cooling it if too hot.

A Pregnant Woman ought to shun too warm an Air, because it weakens and enfeebles the Body; on the other Hand,

she must with equal Care avoid an Air which is Cold and Foggy, which may cause Rheums and Coughs, which putting her Body into an Agitation, may make a Concussion of the Womb, and cause an Abortion. She ought not to live in strait narrow Lanes or Allies, or near common Sewers, or other stinking places, because ill Scents will make her apt to miscarry. She must avoid the noxious Fumes of Charcoal, especially when not burnt in a Chimney, and also all Perfumes and other sweet Scents, especially if she be Hysterical.

If a Pregnant Woman has a longing after odd things, she must be indulged, tho' perhaps the things she desires are improper, provided she eat moderately. But if she have no extravagant Appetite, let her eat any sort of wholsom Meats, in such quantity as may suffice for the Nourishing her self and Child, in which her Appetite is to be a Rule. Fasting or long Abstinence is hurtful, because it heats the Blood, and conveys ill Nourishment to the Child, which renders it weak, and decay'd, and often makes it struggle to free it self before its time, and seek for better Food. On the contrary she must not eat too great quantity of Meat, especially at Night, because the Womb in the last Months of going with Child, possesses a great part of the capacity of the lower Belly, and hinders the Stomach from retaining much; and hence, when it is over-charged, it causes Belches, Indigestion, and difficulty of Breathing, proceeding from a compression of the Diaphragm, which wants liberty of Motion. Let her therefore eat little and often, and let her Bread be of the best Wheat, white and well baked, and not brown Bread or baked Crust, which swells in the Stomach. Let her eat good Nourishing Meats, as the most tender pieces of Beef, Veal, Mutton, Lamb, Fowl, as Pullets and fat Capons, or Partridge, Pidgeons boiled or roasted as she desires; New-laid Eggs are very good, and Pregnant Women seldom having good Blood, ought to put into their Broth such Herbs as purifie it, as *Sorrel*, *Lettuce*, *Succory* and *Borrage*. A Woman with Child ought to eat no High seasoned Pies, especially the Crust which is difficult to digest; and if she eat Fish, it ought to be fresh and not salted, and such as is bred in Rivers and Running Waters, because Pond-fish usually tastes of Mud, and breeds ill Juices. She may drink at Meals a little good old Wine diluted with Water. Red Wine is better than White, and strengthens the Stomach, helping Digestion, which is always
bad

bad in the time of pregnancy. If she was not used to it before, she must gradually accustom her self to it, but must never have it cool'd with Ice, or any otherwise drink it too cold, for cool Liquors are apt to breed the Colick, and by consequence endanger Abortion. On the contrary, she must no less carefully avoid what is heating, such as all Salt, Sharp, Bitter, Aperitive and Diuretick things, which provoking the Courses, are apt to make a Woman miscarry.

Women with Child are apt to have a sharpness of Stomach, to prevent which they must refrain eating of Fruits, Sallers, Sugar, and drinking of Wine, which extremely sowres all their Aliment, and lastly keep their Bodies soluble.

Women with Child must have moderate Sleep, that is eight Hours at least, and ten at the most in the Night-time, and little or none at all in the Day-time. However Women who are used to sleep in the Day-time, must be indulged in this bad custom, rather than do violence to Nature in breaking an ill habit too abruptly.

As for Exercise and Rest, these differ according to the times of Pregnancy. For the first four or five Days after Conception, a Woman ought to keep her self in Bed, and decline the embraces of her Husband. During all the remaining time of her going with Child, she must use no violent exercise, must not go in any Coach, Chariot, or on Horse-back, because these Agitations of the Body are apt to loosen the *Fetus*, and if she have occasion to go Abroad, it must be in a Chair or Litter. She must not carry any great Burthen, or lift her Arm too high; and for this reason she ought not to dress her own Head. The lifting of the Hands has caused many Abortions, because the Ligaments of the Womb are relaxed by these violent extensions. Her Shoes ought to be low-heel'd, because the Rising of her Belly hindring her from seeing her Feet, she is apt to fall.

If a Woman happens to stumble, fall or hurt her Belly by any other Accident, and she find her self to void Blood, or a Bloody Serum, or indeed any Water from the Womb, let her repose her self some Days without seeing her Husband, till these evacuations cease, and she find no pain in the Reins or Bladder.

In short, she must govern her self so in all exercises, as to exceed in too much Rest rather than Motion, because a much greater danger attends the one than the other; and

when ever a Woman is advised to use Exercise to facilitate her Delivery, it must ever be understood to be very moderate. A Woman with Child ought to abstain from the embraces of her Husband, the two last Months before her Term, because in these Caresses, there is a great Agitation of the Body and Compression of the Belly, which often occasions a wrong Posture of the Child. A Woman with Child ought to have a presence of Mind, and to be prepared against all Surprizes which may happen, as Claps of Thunder, Firing of Canon, and other sudden Noises, which Resolution is difficult to be obtained.

Women with Child are subject to a Constriction of the Belly, because the *Fetus* presses on the *Rectum*, and hinders a free discharge of the Excrements; besides there is usually in Women with Child a certain Heat of the Bowels, which disposes them to Costiveness. Let a Woman who is subject to this inconvenience eat *Boyl'd Apples, Stew'd Prunes, New Figs, Mulberries, Honey with Bread, Rye Bread, Veal Broth, &c.* and take a Clyster of *Warm Water* frequently to humect and relax the Gut. Let her sometimes take clean *Cassia* ʒ℥. or *Veal Broth* with the Emollient Herbs, and an ounce of the best Honey. If these innocent Remedies are not sufficient, give her mild Clysters made of a Decoction of *Mallows, Marsh-mallows, Pellitory, and Anise-seeds*, with two Ounces of brown Sugar dissolved in it, adding a little Oyl, or a Decoction of *Bran*, adding *Honey of Roses* with a piece of *fresh Butter*, or any other thing as occasion requires. But here be cautious not to give sharp Clysters, or any thing which may excite a *Diarrhæa*, and cause too great an Evacuation, because this will endanger an Abortion.

She must moderate her Passions, especially Anger and Jealousie; and care must be taken not to Surprize her with Fear, or the Relation of any Accident which may affect her with extraordinary Grief. These Passions put the Spirits into a Disorder, and often cause Women to fail in Labour at that very instant.

When a Woman finds or suspects her self to be with Child, she must not, as that Sex usually do's, wear Bodice with Whale bone, for these hurt the Breast, and compress the Belly, and often cause the Children to come before their time, and sometimes mis-shapen. These Nice Ladies out of affectation of shewing a good shape, spoil their Belly, which after they are laid is full of Wrinkles, because the Skin not having liberty to extend it self on all sides, forces its way
towards

towards the Thighs, where being exceedingly stretched, it can never after regain its pristine State, but hangs down like a Purse, and this Folly sometimes causes them to have Ruptures. For this reason Big-bellied Women must have their Clothes loose without Buskins which compress the Belly, and the *Fetus* in it. In the last place they must never bath for fear the Womb open, and an Abortion ensue.

A Woman with Child if occasion require may Bleed, but the Evacuation must be small, and there is no great regard to be had to the time, provided the quantity be not too large.

Of Vomiting in Women with Child.

A Woman has most commonly an inclination to Vomit in the beginning of her Pregnancy, and at such times there is no great apprehensions; but if this continue it weakens the Stomach exceedingly, and it is more apt to corrupt, than digest the Food. These Vomirings continue till the third or fourth Month, which is the time the Child stirs most. After that time Women usually begin to regain that Appetite which they had lost the first Months, and this seems necessary, because the Child growing greater, requires a larger supply of Nourishment. Sometimes the Vomiting persists, and then the Woman is in great danger of Miscarrying, because these Commotions throw the *Fetus* lodged in the Womb downwards. Some Women are more afflicted with this Accident in the latter Months, than in the first, because the Stomach is compressed by the distention of the Womb. This Vomiting when it happens to Women whose Children lie high, do's not cease till their Delivery.

You need not be concerned if a Woman Vomits in her first going with Child, if this be not attended with any extraordinary straining, but if it persist after the fourth Month, some Remedy must be used; because the *Fetus* growing large, requires Nourishment as well as the Mother, and must necessarily be deprived of it, if she continues to cast it up, besides the commotion of the Body endangers an Abortion, or a Descent of the Womb.

This Vomiting cannot be stopt of a sudden, but must be abated and checked by degrees, by taking good Sustenance, and eating but a little at a time, because the Stomach being repell'd by the Womb, the Meat regurgitates. To this

end let the Patient make her Meat palatable with *Juyce of Oranges, Limons, Pomgranats*, or a little *Verjuice* or *Vinegar*, as her Appetite serves. She may take often a Decoction made of *Flower of Barley*, first baked a little in an Oven, and then mixed with *Telks of Eggs*, to make it more Nourishing and easie of Digestion. She may likewise eat after her Meals, a little *Marmelade of Quinces*, or *Jelly of Goosberries*, and drink some old *Red Wine* mixt with *Spring Water*, or in want of that clear *River Water* with *Iron* quencht in it. Let her refrain from all fat Meats, which are apt to relax the Stomach and excite Vomiting, and so do all things which are sweet and prepared with Sugar. Let her give a grateful sharpness to whatever she eats, for all sharp things are Astringent, and preserve the Tone of the Stomach. A Spoonful of *Aqua-vite*, or a Glas of Sack now and then, is very proper to take off *Nausea's* and Vomiting.

If Vomiting continue after a Woman is gone half her time, have Recourse to mild purges, as *Sena*, ʒi. *Rhubarb*, ʒss. and *Syrup of Succory*, ʒi. This is a good Medicine to attenuate and carry off the tenacious Humours lodged in the Stomach and Guts, or purge her with *Manna*, *Cassia*, *Tamarinds*, and such like Lenitives, never omitting a little *Rhubarb* and *Compound Syrup of Succory*. But a Woman under these Circumstances, must never use violent Medicines, as *Antimony*, *Hellebore*, or *Scammony*, for fear of an Abortion.

If notwithstanding the Woman continues to Vomit, it is best to leave the cure to Nature for fear of an Abortion, which will infallibly follow when she is seized with the Hiccough.

Note here it is convenient to Bleed in these cases before purging, interposing some small interval of time between these Evacuations, for fear of putting the Blood into too great a Commotion.

The cold Air is a great enemy to Women apt to Vomit, and therefore they ought to go warm clad, and wear a Lambs Skin on their Breast and Stomach.

Of Pains in the Back, Reins and Hipps of Big-bellied Women.

The Pains of these parts proceed from the distention of the Ligaments of the Womb, which are inserted in these places. The best Remedy to appease these Pains is Rest, and a Big-bellied Woman who in straining has distended these

these Ligaments, ought to lose a little Blood in the Arm, and keep her Bed for some time. If the Pains arise from a bearing down of the Womb on the lower parts, the Woman must keep her Bed, or at least her Belly must be suspended with a large Swathe till the time of her Delivery.

If there be any extraordinary excretions from the Womb mixt with Blood during these Pains, there is great danger of Abortion, and it shews the Womb begins to open. But to avoid being deceived in passing a Judgment in this case, consider well if there be a great Repletion of Blood, or the Woman be subject to the Gravel, both which are capable of producing this Accident; and if either of these appear to be the cause, let proper Remedies be used, but with great Moderation.

Of Pains in the Breast.

When a Woman becomes Pregnant, her usual Monthly evacuations ceasing, and she breeding still new Blood, it flows to the Breasts, and distending the Vessels there creates great Pain. A Woman at this time must be exceeding careful not to hurt these parts which are extremely sensible. She must not go with her Bodice strait laced, for fear of a Contusion, which may end in an Inflammation and Abscess. If the Pains of her Breasts continue after the third Month, let her Bleed in the Arm, forbearing all Repellent and Restricting Medicines, let her use a cooling Diet, moderately Nourishing, and keep her Body open.

Of Difficulty of Urine.

When the *Fetus* compresses the upper part of the Bladder it necessitates a Woman to make Water every Moment; but if it compresses the Neck, as in the first Months after Conception, it intercepts its Passage. Sometimes the sharp Salts of the Urine pricking the Bladder, stimulate a Woman to make Water frequently, and inflame the Bladder, from whence a Suppression of Urine ensues.

If a Woman with Child have a Stone in the Bladder, it is exceeding troublesome, and the Womb pressing the Bladder on it, creates insupportable Pain, if the Stone be rugged and unequal.

There is a necessity to help this Accident as soon as is possible, because the Woman's straining to make Water, forces down

down the *Fœtus*, and hastens the Birth. If it proceeds from a Compression of the Bladder by the bigness and weight of the Womb, the Woman may in some measure help this by keeping up her Belly with both Hands when she makes water; or suspending it with a Swathe, or which is best of all keep her Bed. If it proceeds from the Acrimony of the Urine, which inflames the Neck of the Bladder, it must be abated by a cool *Regimen*, and drinking a Pilsan, refraining from Wine. She may use Emulsions Morning and Night made with the Cold Seeds in *Barley Water*, with a Spoonful or two of *Syrup of Violets*, or *Nymphaea*. If this do not abate the Inflammation, let her Bleed in the Arm, and foment all the External part of the Neck of the Bladder with warm Milk, or a Decoction of the emollient cooling Herbs, as *Mallows*, *Marsh-mallows*, *Pellitory*, *Violet-Leaves*, with a little *Linseed*; or inject the same into the Neck of the Bladder, adding to it a little *Oyl of Violets* or warm Milk; the Woman in the mean time must refrain from Copulation.

If these Remedies prove ineffectual, hold up her Belly and introducing a *Catheter* (being first well Oyled) thro' the *Urethra* into the Bladder, by this means evacuate it, and if the Suppression return, use the *Catheter* again, as long as occasion shall require. If this inconvenience continue, let her use the Half-Bath, having an especial care that she be not moved by it; all hot Diureticks endanger an Abortion, and therefore she must shun the use of them.

If the Difficulty of Urine proceed from a Stone of the Bladder, thrust it back with the *Catheter* if it be large, but if it be small, try to fetch it away with an Extracter, putting the Forefinger into the *Vagina* to keep it steady, and hindring it from recoyling into the Bladder.

Of a Cough and Difficulty of Breathing.

Women whose Children lie high are subject to a Cough, because the VVomb bears up the Diaphragm. A violent Cough is one of the most dangerous Accidents which can befall a VVoman with Child, and must be carefully prevented by a regular and cooling Diet, avoiding all sharp and high Seasoned Meats. If it arise from the sharpness of the *Lympha*, she must refrain from all sower things, as *Oranges*, *Lemmons*, *Pomgranates*, *Vinegar*, *Verjuice*, which are to irritate the Part, and excite a Cough. On the contrary, let

let her use all such things as temper and sweeten the Blood, as *Milk-meats*, *Decoction of Liquorice*, *Sugar-candy*, *Syrup of Violets* and *Mulberries*, some Spoonfuls of which she may mix with her *Prisan* (made of *Fujubes*, *Sebesten*, *Raisins of the Sun*, *French Barley*, with a little *Liquorice*,) adding to all these a few Clysters. In the last place, if all these means prove ineffectual, and there appear manifest signs of Repletion, let her Bleed at whatsoever time of her going with Child it be, for moderate Bleeding can never be so dangerous as a continual Cough.

If her Cough proceed from taking cold, let her keep her self warm in her Chamber, and take some Spoonfuls of *Syrup of burnt Wine*. To make this, R. the best *Wine* half a Pint, *Cinnamon grossly powder'd*, ℥ii. *Cloves*, n. vi. *Sugar double Refined*, ℥iv. Put these together in a Silver Porringer, and boil them upon a Chafing-dish to the consistence of a Syrup, of which let the Woman take at Night, an Hour or two after a light Supper, or let her take a little good *Rosa Solis*. It is requisite the Woman have her Body open, to which end she must sometimes take Clysters, have all her Drink warmed, speak little, and refrain from Copulation. If she want Sleep, that must be procured by mild Somniferous Juleps, and not by strong Narcoticks, which are dangerous in pregnant Women, and never to be used without pressing necessity.

Some Women bear their Children so high, that they have not liberty to breath, in this case Bleeding is necessary to discharge the Lungs, and make room for their expansion. If this difficulty of Breathing proceed from a Compression of the Diaphragm, the Woman must go loose in her Dress; must eat but a little at a time and often; must refrain from all viscous or windy Meats, as *Pease*, only feeding on things easie of Digestion, and Laxative; must shun all Melancholy apprehensions, and sadness of Mind; for these Passions are apt to divert the Blood, and determin it to the Heart in so great a quantity, as may endanger a Suffocation.

Of Varicose Swellings, and Pains in the Thighs and Legs.

In the last Months of a Womans going with Child, the Womb being very much distended, compresses by its weight the Iliac Veins; by which the Refluent Blood is hindred in its Ascent, and the *Saphena* and Crural Veins, together with all the Vessels of the Legs and Thighs, are tumefied by
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its Regurgitation, and the Blood it self stagnating, causes great Pains and Swellings. These varicose Swellings only admit of a palliative cure during the time of Pregnancy, viz. by laying a compress of Rags, and binding it on the tumefied Vessels. Let the Roller with which the Part is bound, be about two or three Inches broad, and begin to apply it below, ascending to the *Varices*, which being constricted by this Bandage, are incapable of farther Dilatation, and the Blood hinder'd from staying too long, and corrupting in them, whilst at the same time it finds a passage through the other Vessels, and by consequence the Circulation is not intercepted. Let the Woman during this keep her Bed as long as she can, because the Blood ascends to the Head more easily, whilst she is in this Posture, than when standing. If the *Varices* arise from Repletion, let her Bleed in the Arm. Bleeding in the *Varices* themselves is condemned by Practitioners; as being an equivalent to Bleeding in the Foot, a thing never to be practised in Women with Child.

Some Women have only Oedematous Swellings (proceeding from abundance of ill juices) which retain the impression of the Finger. These are to be cured by promoting Transpiration, by applying compresses dipt in Aromatick Tinctures, and repeated twice or thrice a Day; for instance, *R. Rosemary, Bays, Time, Marjoram, Sage and Lavender*, &c. one Handful, *Provence Roses* half a Handful, *Balaustians Alum*, a ʒi. Boil all in three Pints of *Red Wine*, to the consumption of one third, and then strain it through a Linen Cloth, and keep it for use.

Of the Hemorrhoids.

The *Hemorrhoids* in Women with Child, arise from the stopping of their Courses, which constrains the Superfluous Blood to seek that way for its discharge; oftentimes they proceed from great straining in going to Stool, Big-bellied Women being for the most part bound.

If the Piles are small and indolent, care must be taken (whether they be within or without the Body) to prevent their encrease by the use of Medicines, proper to hinder and prevent a Fluxion on the Parts, but if they are large and painful, the Pain must be appeased; for so long as that continues, the Fluxion necessarily increases. And therefore if there be an apparent Repletion, let the Woman Bleed to
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abate and divert the plenitude, let her Diet be Regular, moist and cooling, let her abstain from all high seasoned Meats; and refrain from the embraces of her Husband. If the Piles proceed from her being bound, and the Excrements are hardned in the *Rectum*, which frequently happens in Persons who have been a long time without going to Stool, give her a Clyster of VVarm VVater, or a Decoction of *Mallows*, *Marsh-mallows*, *Pellitory*, *Violet Leaves*, *Linseed* with *Honey* and *Nenuphar*, mixing with it a little *Oyl of sweet Almonds*, and *Fresh Butter*, without any sharp Ingredients which will not fail to exasperate them, especially when the Piles are inward. To pass in the Pipe with less trouble in giving the Clyster, put the lesser end of a Pullers Gut on it. Let her keep to a cooling Diet, and repose her self on her Bed till the Fluxion cease, and during this time foment the Piles with *Warm Milk* from the Cow, or Decoctions of *Marsh-mallows*, *Tapsus Barbatus*, and *Linseed*. *Oyl of Eggs* alone, or *Oyls of sweet Almonds*, *Poppies* and *Nenuphar* beat up with the Yelk of an Egg, for a long time together in a Leaden Mortar, are admirable to allay the Pain, and if the Inflammation be very great, a little of *Galen's Cerate*, mixed with an equal quantity of *Populeon*, may be put in. If the Piles do not go off, and the Swelling do's not abate after the use of these Remedies, open them with a Lancet if they are hard, or if they are soft apply Leeches, which will serve well enough, and create less Pain.

If the Piles discharge Blood in great quantity, the Life of the Mother and Child are both very much endangered; and therefore to prevent this Mischiefe, foment well the part with a Decoction of *Balaustians*, *Pomgranate Peels*, and *Provence Roses* in *Smiths Water*, adding a little *Alum*; or apply a Cataplasme made of *Bole Armoniack*, *Dragons Blood*, *Terra Sigillata*, and the *White of an Egg*. Bleeding in the Arm likewise is very proper, to turn the Course of the Blood.

Of a Loosness in Women with Child.

VVomen with Child are subject to divers sorts of Loosnesses, all which are apt to make them Miscarry, if they be violent and last for any considerable time; but the worst of this kind is a Dysentery or Bloody Flux, because this is accompanied with vehement and sharp Pains in the Guts, which cause Throes and great Straining to go to Stool, which

which often brings the Birth before the due term is accomplished.

Timely care must be taken in these Fluxes of the Belly to prevent Abortion; and for this end their Nature must be considered; for instance, In a Lientery ensuing on continual Vomiting, which frequently happens, the Woman must abstain from all sorts of unusual Food; must eat nothing but what is Nourishing, and easie of Digestion, and that in small quantity too, that the Stomach may more easily concoct it; she must drink a little Red Wine diluted with Water, in which Iron is first extinguished, instead of her Prisan which is not proper on this occasion, unless she have a high Fever (for except it be high, she need not refrain) and in this case she may take some good Cordial or Restorative before and after Meals, as a Spoonful or two of *Syrup of Burnt Wine*, a little *Hippocrans* or *Alicant*. She may before Meals eat a little *Conserve of Roses*, or *Marmelade of Quinces*, and wear a Lambs-skin on her Stomach, to preserve and strengthen its Natural Heat, which is necessary for Digestion. She must not take any purgative Medicine, for these are apt to destroy the Tone of the Stomach, and disable it from performing its Office.

When the Flux is no more than a simple gentle *Diarrhea* of no long standing, and the Woman is not much incommoded or endangered by it, it is sufficient to moderate it without stopping it all at once; but if this Evacuation continues above four or five Days, the Tenacious Humours lodged in the Guts, must be carryed off by some mild Purgative, as an *Infusion of Rhubarb* with *Syrup of Succory*, or an Ounce of *Double Catholicon* with *Rhubarb*.

But if the Looseness continue notwithstanding, and become a Dysentery, and she have constantly bloody Stools, great pains in her Bowels, and a *Tenesmus*, she is in very great danger of Miscarrying. The way to prevent this mischief, is to purge with the Medicines before mentioned, and prevent the breeding of ill Humours in the Bowels by a good Diet. To this end let her eat *Veal* or *Chicken Broth*, with the cooling Herbs boiled in it, with a *Quince* to allay the sharpness of the Humours; let her eat *Rice* boiled in her Broth, or let some New-laid Eggs be beaten in, because these smoothen the inside of the Guts.

A Woman in this condition may drink *Chalybeate Waters*, with a little *Wine* if she have no Fever, or if she have, she may take a Spoonful of *Syrup of Quinces* or *Pomgranats* in a Glass

Glass of Water, and eat a little *Marmelade of Quinces*, or *Conserve of Roses*, or some other Restraining and Corroborating things, after being well purged. To abate the violent and sharp Pains in the Belly and *Rectum*, which arise from a discharge of sharp Humours on the Parts, and excite continual Throes endangering an Abortion, give a Clyster made of the *Decoction of a Calves or Sheeps Head*, adding to it two Ounces of *Oyl of Violets*, or of New Milk, with the *Yelks of two New-laid Eggs* beat with it, and give the Patient a little *Laudanum* in the Yelk of an Egg, to cause her to rest quietly. When she has retained these Anodyne Clysters as long as she can, next give her deterfive ones made of the *Decoction of Barley, Mallows and Marsh-mallows*, with *Honey of Roses*, and after these Astringent ones (without *Oyl or Honey*, which are laxative) beginning with the weakest, as *Lettuce or Plantain Water*, and after giving stronger made of a *Decoction of the Leaves and Roots of Plantain, Tapsus Barbatus, Horsetail, Provence Roses, and Pomgranate Peel* boild in *Smith's Water*, adding *Terra Sigillata, Dragons Blood*, $\bar{a}$ 3ij. and with this foment the Fundament. Before the use of these Restraining, the Woman must be purged with the Medicines above mentioned, for fear of endangering the Life of both the Mother and Child, by a Retention of abundance of vitious Humours.

But since Dysenterick Pains frequently proceed from a sharp Humour lodged in the Stomach, and the effect of Clysters do's not extend so high, it is convenient for the Patient to drink half a *Porringer of New Milk* twice or thrice a Day, and this Remedy has often relieved Pregnant Women in Dysenteries. But the Cow which gives this Milk must not be Heated, have a gross full Body, or have lately Calved, but ought to be sound, and fed upon a good Pasture well watered.

Of the Menstruous Flux in Women with Child.

Sometimes Women have their Courses for the first four, nay six Months. When a Woman voids Blood downwards, it must carefully be considered whence it proceeds, and in what manner, whether it be the ordinary Courses, or a Real Flooding. If it be the Courses, the Blood comes away at accustomed times, and flows by degrees from the Neck of the Womb, and not from its Bottom, as may be discovered, if trying with a Finger if the Internal Orifice be exactly

exactly closed, which could not be if the Blood come from the bottom of the Womb; to all which add, if it be the Courses it will be small in quantity. Sometimes this Evacuation of Blood is not Menstruous, and yet must not be thought a Flooding, for if the Woman be full of Blood, and the abundance be greater than the *Fetus* can consume, this Evacuation is so far from being hurtful to the Mother or Child, that if the Womb was not discharged of that Superfluous Blood, the *Fetus* would be suffocated by it. On this occasion it is better to bleed moderately, than leave Nature to perform her Work.

If there be no visible Repletion, and the Courses continue after a Woman is with Child, it proceeds from an extreme fluidity of the Blood, which persisting during the whole time of her going with Child, makes her subject to miscarry, or if she escape, her Child will be weak, tender, and unhealthy. To prevent these Accidents, let her repose her self in her Bed, refrain from all Meats which may heat the Blood; shun Anger, using a cooling Diet, and feeding upon Meats which breed good Blood, and thicken it, such as are good Broths made with Chickens, Necks of Mutton, or Knuckles of Veal, in which may be boiled cooling Pot-herbs, as *Purflane*, *Lettuce*, &c. *New-laid Eggs* or *Gellies*, with *Rice* and *Barley* boiled in them are good. She may drink water in which Iron has been quenched, with a little *Syrup of Quinces*; she must refrain from Copulation, because by heating the Blood, it excites it to flow more. If all these Means are ineffectual, and the Flux continues, make a Revulsion by Bleeding in the Arm, if the Womans strength permit, and apply to the Mothers Belly Compresses dipt in *strong Wine*, in which a *Pomgranate* with its Peel, *Provence Roses*, and a little *Cinnamon* have been boiled, but the best way is to correct the Mothers Blood.

Of Floodings.

Floodings proceed from the bottom of the Womb with great Pain, and come of a sudden, the Blood runs away in great quantity without intermission, except when some clods seem sometimes to lessen the Flux, or stop it for a time, but soon after it returns with greater violence, and kills both Mother and Child, unless timely prevented.

When this Flooding happens to a Woman who is young with Child, the cause most commonly is some Mole or false
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Conception, which the *Womb* labours to expel, and in the effort breaks the *Blood-Vessels*. In *Women* who are really with *Child*, it proceeds from a loosning of the *Placenta*, whose separation opens the Mouths of the *Vessels*. This most commonly is occasion'd by some Blow, Slip or Hurt, though sometimes it is caused by the *Child* twisting himself in the *Navel-string*, and so drawing the *Placenta* very strongly. This *Flooding* never ceases till the *Woman* be delivered, and is more violent and dangerous in proportion to the largeness of the *Fetus*.

Every Evacuation of *Blood* do's not require the *Woman* to be Delivered immediately; for sometimes the loss is very small, and may be stop'd by keeping her quiet in her Bed, Bleeding her and confining her to a good Diet, and the *Blood* perhaps is only her *Courses*, or proceeds from some *Vessel* which opens it self on the outside of the internal Orifice, and keeps the *Womb* from being exactly closed. In this case it is necessary to try whether the internal Orifice is open on the inside, or whether the *Child* can be felt across the *Membranes*, for if so, it is a demonstrative proof it is a Real *Flooding*, and the *Woman* will soon Miscarry.

If the *Blood* come away in small quantity, and the Evacuation do not last long, leave the Delivering the *Woman* to Nature, provided she have a competent degree of strength, and no dangerous Accidents happen. But if it come away in great abundance, or the *Woman* have Swoonings or Convulsions, it is absolutely necessary to deliver her at whatever time it be, whether she have the Pains of Labour or not, and there is no other way to preserve the Life of the Mother and *Child*. To this end let the Artist place the Patient on her Back, and anointing his Hand with fresh Butter or Oyl, by degrees insinuate his Fingers close together into the *Womb*, and spread them one from the other when they are in the Entry, and dilate it by degrees without Violence. When he has his Hand in the *Womb*, if he finds the Waters are not broke, let him tear the *Membranes*, and slip his Hand in and fetch away the *Child* by the Feet, and after that bring away the After-burthen, which do's not adhere very firmly, taking care to leave no clods of *Blood* behind; for these will cause the *Flooding* to continue, which otherwise would soon cease.

Since in all great Losses of *Blood*, great *Weakness* must necessarily follow, let the Patient be strengthened with good Broths, Gellies, or a little *Wine*; for Liquid Aliments have

a more prompt effect than Solids. Let her smell to some Spiritous Liquors, as *Aqua Vita*, *Queen of Hungaries Water*, or lay a *Toast steep in Wine*, in which *Cinnamon* has been infused, or Bleed her in the Arm if her strength permit, and she be not too much exhausted; observing to close the Orifice from time to time, for the more easie diverting the current of the Blood, without weakning her too much.

You may try to stop the Flux of Bleed by Napkins dipt in *Oxycrate* made with *Plantane Water*, applied to the small of the Back; or let the Patient lie on a Mat, and take two or three Ounces of *Juyce of Purslane*; if all these Remedies are ineffectual, deliver the Woman forthwith, though she be not above three Months gone, leaving nothing in the Womb, and this is the only means to save her Life.

Of the Weight or Bearing down of the Womb.

The Weight and Bearing down of the Womb, hinders a Bigg-bellied Woman in her walking, and causes a Stupor of the Hips and Thighs, Pains in the Groin, a Difficulty of making Water, and discharging the Excrements in the Guts, (because it compresses the Bladder and *Rectum*, and draws down the Ligaments,) all which Accidents are capable of making a Woman Miscarry. The best Remedy in this case, is to keep her lying a-bed, but if she be not in a condition to do this, let her support her Belly with a large Swathe, to ease the Ligaments, which are very much strained, and when she makes water, let her hold up her Belly with both Hands to keep it from pressing on the *Sphincter*.

If the Neck of the Womb be too much relaxed by the Humidities, let her purge at convenient times, and use a dry Diet, feeding much on Roasted Meats. Let her not go strait laced, for fear of compressing the Womb which bears down too much already.

Of a Dropsie of the Womb.

The Womb is sometimes swoln and distended with water, which is apt to impose on Midwives, who mistake this Distemper for a VVomans being with Child.

Sometimes these VVaters are inclos'd in a Cover, and sometimes they are in the cavity of the VVomb. VVhen they have no Cover, they are often mistaken for a true Big-belly, and this

this error remains till the usual Term is compleated. The longer any VWoman retains these waters, the more she runs a risque of her Life, and sometimes they grow to so vast a bulk, that some have been found with 30 lb. in their VVomb.

To distinguish between this Hydropical Swelling, and a true Great Belly, consider well the Signs of Pregnancy which are delivered above, that having nothing common with this, except a Distention of the Belly, and a Suppression of the Courses. In a Dropsie the VWoman has her Breasts flabby, soft and fallen, has no Milk in them, do's not feel the Child stir, perceiving only a Fluctuation of the VWater, has a great pain and weight in the Belly, which is more extended in its circumference, and do's not rise to a Point, and the colour of her Face is worse, than when with Child. Barren VWomen are more subject to this Indisposition, than those who have had Children; and these have the Inner Orifice of the VVomb, straiter and thinner than the other.

Dropsies of the VVomb sometimes happen in VWomen who are with Child, and in these cases the VVaters are without the Membranes which contain the Child. Sometimes too they are inclosed within the Membranes, and the VWoman seems to be big with two or three Children, though she really have but one, and that very weak too. Sometimes abundance of these VVaters come away two or three Months before Labour, and in this case it is certain they are without the Membranes, for if the VVaters were broke, the Child of necessity must needs follow.

VWhen this Dropsie happens to a Pregnant VWoman, all the Relief she can have is the Patient expecting her time of Labour, and in the mean time using a drying Diet. But if there be nothing besides VVaters contained in the VVomb, let her use a Half-bath, Diuretick Medicines, and all such things as provoke the Courses, to evacuate them. Farther, let her Bleed in the Foot, and purge with strong Hydragogues. The *Bourbon* VVaters are very good, especially if the Bath at the same time she drinks them.

Of Oedematous Swellings in the Lips of the Privities.

Sometimes the Lips of the Privities are so much Swoln, that VWomen cannot bring their Thighs together, or walk without a great deal of Pain. The Lips are Transparent

as in a *Hydrocele*, which arises from the *VVaters* which distend them. It is necessary to discuss this Tumour before the time of a *VVomans* Labour, because it straitens the Passage, and hinders her Delivery. To this end give her a Ptilan made of Roots of *Dog-grass* and *wild Succory*, in three Pints of which dissolve a *Dram* of *Chrystal Mineral*, or a little *Spirit of Salt* dulcified; or make some slight Scarifications on the Lips to discharge the *VVaters*. Apply to these Scarifications a little *Oynment of Roses*, and Compresses steeped in some Aromatick *VVine* to strengthen the parts, confining the *VVoman* to such a Diet, as may hinder the breeding of more *VVaters*. Scarification with a Lancet, is much better than the Application of Leeches, because the Aperture made by these little Animals is so small, that it closes immediately, and Scarifications may be kept open as long as you think fit, by laying on unctuous Medicines.

These Oedematous Tumours are not very dangerous, when they are without Fever; but when they proceed from an Inflammation attended with a Fever, the *VVomb* is most commonly affected too, and it proves fatal to the Person.

Sometimes there are varicose Swellings on the Lips of the *VVomb*, which causes a troublesome itching. *VVomen* who labour under this inconvenience, are Sanguine for the most part, and have their Body bound. To remedy this, let them bleed in the Arm; keep their Body open, refrain from Copulation, and use a cooling Diet.

Of the Venereal Diseases in Women with Child.

If a *VVoman* with Child labour under the Venereal Distemper, and be in her last Months, she must wait till her Delivery before she attempt a Cure, for fear of dying if she happen to be in a course of Physick at the time of her Labour. If the Distemper be not far gone, which is to be known by the Accidents, a Palliative Cure must be attempted for the present, using a regular Diet, and gentle purging. But if a *VVoman* be in the first Months of her going with Child, and the Pox be very high, and attended with such Accidents as threaten her with Death, if her Cure be deferred for too long a time, let a slight Salivation be raised by inunction of the upper parts only, as the Hands and Arms; but observe here, you must never in this case give any Mercurial Preparations by the Mouth, and use the utmost care
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least the Frictions throw the Patient into a Loosness, this by disordering the VVomb and exciting Throes, cause an Abortion. Bathing which is sometimes used as a preparative to Mercurial Inunction, must be omitted in this case, but she may use Pissans to humect and prepare her for a Salivation, by which (if it be prudently managed) she may be very well cured, and notwithstanding retain her Child till its due time.

Of Abortions.

If a Woman be delivered before her seventh Month, it is called an Abortion, but if at any time after the beginning of that, to the beginning of the tenth Month it is called a Birth, because at that time the Child can live, and never before it.

All acute Distempers cause an Abortion, because they kill the Child, and then it can remain no longer in the Womb. Intermitting Fevers sometimes make a Woman Miscarry, by causing a great pain in the Belly, and disordering the Child, which commonly struggles very much in the time of the Fit. There are several Accidents which endanger an Abortion, such as are great Vomitings, which by the straining of the parts, compress the Womb, and force it to disburthen it self. Nephritick Pains, Cholick and Griping of the Guts, Stranguries when the Woman labours much in making Water, great Loosness with a *Tenesmus*, abundance of the Courses from the opening of the Womb, excessive Bleeding, Flooding from a loosning of the *Placenta*, Drop-sie of the Womb; in short, whatever makes a great Agitation or Concussion of the Womans Body, as hard Labour, Falls, Leaping, Dancing, Riding, Walking, loud Crying, Excessive Laughing, Blows over the Belly, sudden and surprizing Noise upon firing a Cannon or a clap of Thunder, especially in the younger sort, long Watching which impairs the Strength, long Abstinence which weakens both Mother and Child, Stinks and ill Smells, as a Lamp of Oyl extinguished, or the fume of Charcoal, the Callosity of the Womb, or its smallness, which being compressed by the *Omentum*, wants room to dilate it self, for the Reception of the Child, Compression of the Womb by strait lacing the Body to appear well shaped or conceal a big Belly, frequent Copulation, especially in the last Months, which opens the Womb. Flegmatick Women subject to the Whites are apt to Miscarry, because the Womb is moist and lax, and

the *Placenta* easily separates. The great abundance of Blood which is carried to the *Fetus* too plentifully sometimes, suffocates it. Vehement Rage which puts the Spirits into a great Hurry and Disorder, sudden Fear or the Relation of bad News, often cause a *WVoman* to Miscarry on the Spot. *WVhen* Children are Monstrous, they never come at their due time. The ill Posture of the Child in the *WVomb* sometimes puts him on struggling, which loosens the *Placenta*, and opens the *WVomb*. In the last place, Children are sometimes so large, that the *WVomb* is not capacious enough to contain them, or the Mother able to give them Nourishment.

If after any of these Accidents, a *WVoman* have violent Pains in her Belly and Reins, clods of Blood come away from the *WVomb*, and the *WVaters* are broke, it is certain an Abortion is near. If the *WVoman* feel a great weight in her Belly, and the Child fall as a Ball on which side soever she lie, and stinking Humours come from the *WVomb*, she will Miscarry of a dead Child; especially if the Breasts, which before were hard and full, fall and decay. *WVe* have above directed how to prevent these kinds of Abortions, and therefore shall remit the Reader thither.

A *WVoman* who is subject to Miscarry ought to keep her Bed, use a good Diet, and refrain from Copulation, so soon as she perceives her self with Child, avoiding all Diureticks and Aperitives, and all Passions of Mind, go loose in her Dress, wear low-heel'd Shoes, and take care not to stumble. *WVhen* a *WVoman* with Child happens to receive any hurt, let her keep her Bed, have Compresses steeped in some Astringent *WVine*, applyed to her Belly, and let her be immediately bled in the Arm, without deferring it as usually.

Observe here, that a *WVoman* must never be Delivered, whilst she has a continual Fever on her, for in this case she will die immediately after her Delivery. It is a mistake to think her Cleansings will remove that, on the contrary it encreases them, and the Cleansings are entirely supprest. And therefore all endeavours must be used to abate the Fever before the *WVomans* Delivery.

How to order a Wwoman when her Reckoning is up.

WVhen a *WVomans* term is up, she must abstain from all violent Exercises, lest they cause a Flooding, occasion the Child to take a wrong Posture, or hasten the Birth some days before

before its time, all which is very prejudicial to the Woman: On the contrary let her walk moderately, repose her self more near the end of her time, than in the beginning of her pregnancy, and let her go loose in her Dress. Let her observe a Regular Diet, using Meats which yield good Juices, and are easie of Digestion, rather roasted than boiled, to humect more, and keep her Body open, that so she may not be obliged to take Clysters, which are apt to hasten the Birth. From the eight or ten last days, let her anoint the bearing parts with *Oyl of sweet Almonds*, and Greases to relax and soften them, and open the Passage, especially if it be the first Child, because the parts are straiter. Women who are in years, and never had Children, must have a great care to relax the parts well with Greases, because they are dry, and do not yield so easily, besides the Articulation of the *Coccyx* or Rump-bone is very firm, and do's not easily give way in Labour.

Women when they are near their time, may not bleed by way of prevention, unless they are subject to Flooding, nor in the seventh Month; because this creates a Disorder in the Body, and puts them in danger of Miscarrying.

Women near their time, ought to be provided with some able Midwife or Artist, whom they must send to as soon as they find any great Pains in their Belly, for some times the least Cholick Pain or Gripe flings them into Labour.

How a Woman is to be ordered after her Delivery.

When a Woman is compleatly Delivered, and the Burthen brought away, a Closure of fine Linen Rags five or six times doubled, must be applied to her Privities, to prevent the cold Air from entring her Body, which would shut the Vessels, and stop the Cleansings, and cause vehement Pain and Griping of the Guts, with an Inflammation of the Womb, a Fever, Pleurisie, and frequently Death it self.

After the entry of the Womb is clos'd, let the Woman who is newly Delivered, be carryed to a Bed provided for the purpose, and covered with Cloths to receive the Cleansings. But if she be Delivered in her own Bed, which is best, to avoid the trouble of carrying her to another; let the Cloths and other things be removed, which were laid to receive the Waters and Filth in Labour, and let her be placed in a convenient Situation, that so she may take her

rest, and recover the Strength she has lost in Labour. Let her Body be raised for her more easie breathing, and the flowing of her Cleanings, which if they are retained cause great Pains. Let her put down her Thighs and Leggs close to each other, and have a Pillow under her Hams to support them; Lastly, let her lie on the middle of her Back without turning either to one side or another, that so the Womb may resume its natural Situation.

As soon as the Woman is Delivered, give her an Ounce of *Oyl of sweet Almonds drawn without Fire*, with an equal quantity of *Syrup of Maiden Hair* to cool her Throat, which is heated with her cries in Labour, and take off her Gripes. However if the Woman nauseate this Remedy, forbear it, and give her some good Broth as soon as she is a little recovered from the Fatigue of her Labour, and leave her to Sleep, suffering no noise to be made in the Chamber, drawing the Curtains, shutting the Windows and Doors, not imitating the Practice of some who forbid a Woman to sleep after her Labour; good Repose being the most proper means to recover her Strength, and abate all Accidents which happen.

Of Applications to the Belly and Breasts of a Woman newly Delivered.

As soon as the Woman's Bed is fitted, apply to her Privities an Anodyne Cataplasim made of two Ounces of *Oyl of sweet Almonds*, and two *New-laid Eggs*, both Whites and Yelks stirred together over warm Embers, to the consistence of a Cataplasim, and spread on a Rag, and laid on moderately warm. This Cataplasim is very good to abate the Inflammation of the Parts after hard Labour; when it has lain on three or four Hours, renew it if the Inflammation shall require it; Lastly, make a Decoction of *Barley*, *Linseed*, *Chervil*, *Agri-mony*, *Marsh-mallows* and *Violet Leaves*, and wash the Lips of the part two or three times a Day, to clear it from Blood and other Filth proceeding from the Cleanings, and to appease the Pain, foment it with *Warm Milk*, *Barley* and *Chervil Waters*.

Astringents are not proper till fifteen days after Delivery, when the Purgations are come away, and then such as strengthen the parts may be used; as a *Decoction of the Roots and Leaves of Plantane* and *Provence Roses*, in *Smith's Water*. After the Cleanings are entirely over, which is about the space
of

of three Weeks, to corroborate and close the parts, Water of Myrrh or an Astringent Lotion may be injected, v. g. R^x. Pomgranate Peels, 4 p. Cypress Nuts ʒiſs. Acorns ʒi. Terra Sigillata ʒſs. Provence Roses ʒi. Roch Alum ʒij. Infuse all for the space of a Night in half a Pint of strong Red Wine alone, or diluted with Smith's Water if it be thought too sharp; or boil till it be reduced to a Pint; strain it through a Linen Cloth and press it, and with this foment the Part well Morning and Night.

As soon as a Woman is delivered, let the Skins of some Animal be laid on her Belly to keep it warm. If her Labour has been very hard, let her be very gently Swathed, because her Belly is very sore; nor must these be straitned till her Cleansings are all over. Some Midwives and Nurse-keepers lay a Compress doubled on the Belly, and another large square one over that, and keep these on with a Napkin in three or four Folds, of a quarter of an Ell broad, and so straiten and compress the Belly, but these do only bruise and hurt it. It is better to lay a great square Compress on the Belly for the first fifteen days, to keep it in its right position, undoing this Bandage several times a Day to anoint the Belly (if it be sore, and she be griped) with Oyl of sweet Almonds, which is better than all the Pomatums in the World. When that time is over, you may straiten the Belly and bring the parts together, in which you have nothing to fear, because the Cleansings being finished, the Womb is diminished in its bulk, and there is no great danger of hurting it, provided it be moderately strait, for if it be too strait the Womb is thrust down, and the Woman suffers great inconvenience by that means, and the Flux causes her Belly to remain big for a long time after.

If the Woman intends to suckle her Child, let her Breasts be covered with fine soft Cloths, to prevent the Milk from curdling in them. If the Milk flow in great abundance to the Breast, embrocate them with a mixture of Oyl and Vinegar, and apply Rags dipt in it to them.

What Diet a Woman ought to observe during the time of her lying in.

A Woman newly delivered, must observe the same Diet as Persons in a Fever to prevent it. She must be very regular and abstemious the three or four first days, taking only some Veal or Chicken-broth, New-laid Eggs, or some good Gelly, retraining from all solid Meats.

When

When the abundance of Milk is over, she may be permitted to eat a little Broth at Dinner, or a little boild or roasted Chicken, by degrees encreasing the quantity of her Mear, which always must be easie of Digestion; let her ordinary Drink be a Prisan made with *Dogs-Grass*, *Barley* and *Liquorice*, or *boyl'd Water*, which she must not drink cold; she may drink a little White-wine diluted with Water, after the first five or six days.

Women us'd to hard Labour, require more plentiful Nourishment than others, and it is sufficient for these to lessen the quantity of their ordinary Food.

Let the Woman keep her Bed and rest her self well, not disturbing her Mind with the concerns of her Family, and avoid all Talking, let her Body be kept open with Clysters, giving her at least one Ounce in two Days, and let her be careful to order her self in this manner, till her Cleanings are over. In the last place to finish all, and purge off the remaining impurities, let her take *Cassia* with the *purgative Symps*, and bath and cleanse her Body to receive the Embraces of her Husband.

How to dry up the Milk,

If a Woman do's not intend to suckle her Child, apply to her Breasts a Mixture of *Oyl and Vinegar*, or Oyniment of *Populeum* and *Galen's Cerate* all spread on Rags or Brown Paper, or a Rag dipt in *Warm Verjuice*, with a little *Alum* dissolved in it to make it more astringent, or the *Lees of Wine*, either by it self or mixed with *Oyl*. All these are repellents, and hinder the Humours which breed Milk from flowing too plentifully to the Breast.

To disperse and dissipate the Milk which is already gathered in the Breasts, apply a Cataplasm made of the four Meals (*viz. Barley, Fenugreek, Linseed and Fitches*) *Honey* and *Saffron* boiled with a Decoction of *Chervil* and *Sage*, or make a Cataplasm of *Honey* alone, or rub the Breasts with it, and lay on them Leaves of *red Cabbage*, having first cut off the great Ribs, and deadned them before the Fire. Or make a Decoction of *Box-leaves* and *Sage* in Urine, and foment the Breasts with this, and let Rags dipt in it be applied to them. In the Application of these Remedies, great care must be taken that the Woman do not take Cold, as likewise of inflaming the Breast for fear of an Apostem; wherefore Remedies must be changed as Symptoms alter.

One good way to prevent the breeding of Milk in the Breast, is Purging, and keeping the Body soluble with Clysters. Much stirring of the Arms is apt to create a Pain in the Breast, and therefore the VVoman must use them as little as possible.

About three weeks after a VVomans Delivery, when the Milk is entirely gone off, Astringent Medicines may be used to strengthen the Breasts. To this end apply to the Breasts Cloths dipt in Myrrh VVater, or anoint them with Oyl of *Walnuts*, being careful not to cause hard and painful Swellings by the use of Astringent Medicines.

Of Flooding in Women newly Delivered.

VVhen the Burthen is great the Vessels most commonly are very large, and if it be brought away with violence, a great Flooding follows. This Flux of Blood happens likewise, when any Part of the Burthen remains behind in the VVomb, or there is any false Conception in it; for Nature striving with its utmost efforts to expel any extraneous Body, breaks the Vessels, and pours a Torrent of Blood out of them: Sometimes Serofities only flow from the VVomb, and the Standers by are inclined to believe the Flooding is stopr, when indeed the Mouths of the Vessels are only blockt up by clods of Blood; after the removing which the Flooding returns, and is often more vehement than before.

Flooding is the most dangerous of all the Accidents which befall Child-bearing VVomen, and the Blood sometimes comes away in such large quantities, that there is no time to remedy it, and the VVoman dies upon the Spot. If it proceed from some portion of the Burthen retain'd in the VVomb or Clods of Blood, or some false Conception, all endeavours must be used instantly to bring away those extraneous Bodies; but if after they are removed, the Blood do's notwithstanding continue to flow, Bleed the VVoman in the Arm if she have strength to support it, and whilst she bleeds stop the Orifice from time to time, and let her lie along (that is with her Head not too high) and keep her self still, that by this means the Blood may flow in less proportion to the lower parts, and a sufficient diversion be made without too much weakning the Patient. Her Belly must not be straitned with any Swathe or Compress, for all Bandages are hurtful, if the Belly be sore. Instead of this, let the Air of her Chamber be kept cool, and cover her lightly for fear of heating the Blood, and putting it into a Ferment, (and so

so encreasing the Flux) and give her some strong Clyster.

If in spite of all these Remedies the Flooding do's not cease, lay her upon fresh Straw with a single Cloth on it, and apply to her Loins Napkins dipt in cold *Oxycrate*, or if it be Winter, a little warm'd. Let her take a little Juyce of *Purslain* alone, or mixt with her Broths, or make Injections of *Plantane-Water*. Some pretend that a Girdle of *Knot-grass* put about the Waist, stops all Fluxes of Blood.

Every half Hour to recruit her Strength, she make take a little strong Broth, or some Spoonfuls of Gelley, or Yelks of New-laid Eggs at convenient distances of time, not eating too much at a time, for fear of overcharging her Stomach. Let her Drink be *Red Wine* diluted with a little Water, in which Iron has been extinguished, and let Cloths dipt in Aromatick Tinctures, or in defect of these in burnt Wine, be applied to the Region of the Heart.

When the Flux of Blood begins to stop, and the Woman is a little recovered from her Weakness, let her use a Ptisan made of *Burnet* and *Barley* for her ordinary Drink. If these Remedies have not their due effect, the Patients Life is in great Hazard, and if she escape, you must expect in a few days a violent Pain in the Head, with a continual Fever attended with cold and hot Fits, and this sometimes is intermitting. Women who recover after violent Floodings, have their Leggs ordinarily Swoln for some Months after, because the new Blood must of necessity be serous, and cannot recover its due Consistence in a considerable time. The first Courses which come after Flooding are very plentiful, and in greater quantity than usual, which makes the Woman fear the Flooding is returned; but this proceeds only from the largeness of the Blood-Vessels, is not dangerous, and requires no other Remedy than Rest, and refraining from Copulation.

Of the falling out of the Womb after Delivery.

When there is a falling out of the VVomb, the VVoman feels a great weight at the bottom of her Belly, great difficulty in making VVater, a Pain in her Reins and Back, and a Reddish VVater comes away from the Neck of the VVomb, which is relaxed and hangs out.

To Remedy this Indisposition, let the Neck of the Womb be forthwith reduced to its Natural place, and if the VVo-man be young, and the Disease be recent, she may be cured,
but

but if it be of long standing, the Cure will be difficult to perform. If the VVomb come quite forth upon a VVomans Delivery, and be not immediately reduced, her Life is in very great danger. VVhen this happens, the Artift must have a care not to mistake that large portion of Flesh which hangs between the Thighs for some extraneous Body, it being the Neck of the VVomb it self, which has lost its Rugosities by its Relaxation. If he draws this, there is great Danger of causing a Flooding, and killing the Patient.

For the curing of this Disease, it is necessary to reduce the VVomb to its Natural place, and retain it there. To do this let the VVoman make VVater, having first to facilitate the Work given her Clysters to evacuate the gross Excrements in the *Rectum*, then let her lie on her Back with her Hips raised higher than her Head, and foment with *Milk* or *Wine* luke-warm, that which hangs out between her Thighs, and take the Neck of the VVomb with a soft Rag, and reduce it to its Natural place, thrusting it with the Hand sometimes on one side, sometimes on the other. If the Neck of the VVomb be so large that it cannot enter, anoint it with *Oyl of sweet Almonds*, to put it up the more easily; and when it is reduced, wipe off the Oyl for fear it relax the part, and occasion its falling out again. If the VVomb cannot be reduced, there is great danger of its gangrening, and killing the VVoman.

When the VVomb is replaced, let the VVoman be laid on her Back, with her Hips a little raised, and her Legs crossed, and her Thighs close to each other, for fear of its falling out again, and put a Pessary into the Neck of the VVomb to keep it there. These Pessaries are made of a thick piece of Cork covered with white VVax to preserve them from rotting, and keep them from hurting the Neck of the VVomb, and may be drawn out from time to time to cleanse them; the Reader will find the Figure of them in the Plates annexed at the end.

VVhilst the Cleanings continue, there is no other way to strengthen the VVomb, and keep it in its proper place, but by Pessaries, for Astringent Medicines suppress those Purgations, and are of dangerous Consequence, and compressing the Belly by Swathing it, forces the VVomb still down. Let the Patient have the Pan given her in Bed, and in voiding her Excrements, let her lay her Hand before to keep the VVomb from falling out. VVhen the Cleanings are over,
Astrin-

Astringent Injections may be used, and the Pessary covered with Medicines of the like Nature, and the VVoman be purged if occasion requires. If she be newly delivered, she must not rise from her Bed in six or seven VWeeks, during which time she must refrain from the Embraces of her Husband.

Of the falling out of the Fundament.

When the vehement straining of a VVoman in her Labour, has occasioned the falling out of the Fundament, if the Child be advanced in the Passage, advise her not to help her Throes so much, and defer the Reduction till after the Birth, because it cannot be done before without bruising the Gut. But so soon as she is delivered, reduce it in the same manner, and observing the same Cautions as in the falling out of the VVomb. But omit on this occasion giving of Clysters, because they are apt to excite a straining to go to Stool, and endanger a Relapse.

Of the Hemorrhoids.

VVomen are commonly troubled with the Piles during their lying in. To prevent this inconvenience, let them sit with their Fundament in a Basin full of *Warm Water*, for a quarter of an Hour at a time, or foment the Piles with *Warm Milk*, for the first Days, or *Oyl of Eggs* beat in a Leaden Mortar, either alone or mixed with *Oyl of Populeon*, being careful to put in no Ingredients which may irritate them. By procuring a good Evacuation of the *Lochia* from the VVomb, this Pain abates of consequence.

Leeches applied to the Piles in any of the first days, are apt to divert the due Evacuation of the Cleanings, and bring a Fluxion on the Piles, and for this reason if used, must be deferr'd till eight Days or more after Delivery.

Of Contusions and Rents in the External parts of the Privities.

The great Dilatation of the Privities which is made by the Child in making its way out, cannot fail of sometimes making Contusions and Lacerations, and if these Accidents are neglected, they degenerate into malignant Ulcers, by reason

reason of the continual Heat and Filth of that Part. If there be only simple Contusions or Excoriations, there is nothing farther necessary than the applying a Cataplasm made of the *Yelks*, and *Whites of New-laid Eggs*, with *Oyl of sweet Almonds* seethed over warm Embers, and stirred till they unite. Let this Cataplasm be spread on fine Stupes or Rags, and applied warm, leaving it on for the space of five or six Hours. Next lay Rags dipt in *Oyl of St. Johns-wort* on the Excoriated Lips, renewing them twice or thrice a day, bathing the parts each time with *Barley Water*, and *Honey of Roses*, &c. to cleanse them from the Excrements which come from the Womb. When the Patient makes Water, cover the Lips of the Privities with fine Rags, to prevent them from being excoriated by the sharpness of the Urine. If these excoriations are painful, the best Remedy is *Oyl of Walnuts* drawn without Fire.

Sometimes Midwives do so much violence to the Bearing part, that it is very much inflamed, and a great Abscess formed in it; when this happens, it is necessary to give vent to the Matter, and after that is discharged, to inject some vulnerary Decoction made of *Barley Water* and *Honey* into the Cavity, with a little *Honey of Roses*, and *Spirit of Wine*, and so treat it in the same manner, as all ordinary Ulcers.

Sometimes the *Perineum* happens to be rent quite down to the Fundament in the Birth, so that the *Anus* and *Privities* make but one common Hole. If this were left in this State, the Woman would be delivered with more ease of her next Child; but notwithstanding it is better to reunite the parts as soon as may be, because the Excrements coming that way disgust the Husband, and the Woman is by no means fit to receive his Caresses.

Wherefore having cleansed the Part with *Red Wine* lukewarm, let the Rent be stitched with three or four separate Stitches, according to the length of the Laceration, and take at each Stitch good hold of the Flesh, and then dress it with some Agglutinating Balsam, as *Arcæus Liniment*, covering the Wound with Pledgits or Linen Cloths, to prevent the Excrements from falling on it, which would cause a great deal of Pain, and hinder its Coalition, and let the Woman keep her Thighs close till the Cure be perfected.

If she afterwards happen to be with Child, let her take care not to anoint those parts with Greases and Emollient Oyls, for some time before her Labour, that so the Parts giving

ing way in the Birth, may not be torn. A VVoman who has once had an Accident of this kind, ought to employ a skillful and dextrous Artist, because in all Labours after there is very great danger of Laceration, the Passage being very much straitned by the *Cicatrix*.

If the Reunion of the VVound be neglected at first, the Callosity on the edges must be cut off with a pair of Scissars, and it must then be Stitched, as is above directed.

If the Child stop too long in the Passage, there is a Retention of Urine which creates an Inflammation and Ulcer in the Bladder, which in time becomes a *Fistula*, and emits the Urine involuntarily. This *Fistula* when there is a loss of Substance, and great part of the Neck of the Bladder is consumed by the Suppuration, is incurable, otherwise it may be healed by due Care and Diligence.

Of Pains hapning to Women after Delivery.

After a Woman is delivered, she ordinarily is troubled with sharp Pains in the Reins, Back, Groins, and sometimes in the Womb, and all over the Belly. These Pains are sometimes Continual, and sometimes Intermitting, and proceed from wind in the Guts, or some extraneous Body remaining in the Womb after Delivery, which Nature strives to expel with her utmost efforts. Some false Conception, some portion of Burthen, or some Clods of Blood in the Womb, may be the cause of these After-pains, which cease not till they are ejected, and are not like the Wind-Cholick alleviated by giving of Clysters, but rather exasperated.

Sometimes these Pains proceed from a sudden Suppression of the Cleanings, and then the Womb is distended and inflamed, the Belly is hard and Swoln, and the Woman is quickly killed by it.

Sometimes these Pains arise from an Excessive Distention of the Ligaments of the Womb, and then they are fixed in the Back, Reins and Groins, the places where these Ligaments are inserted, and sometimes they reach to the Womb it self, especially when it has suffered much contusion in Labour.

To prevent these Pains arising from Wind, let the Woman take a mixture of *Oyl of sweet Almonds*, with *Syrup of Maiden Hair*. *Oyl of Walnuts* is better if the Taste be not too Nauseous. These Medicines by their Unctuousity, make way for the Contents of the Guts to slip more easily through them.

them: If the Woman have an averſion to any thing of this Nature, give her ſome very hot Broth, or half a Glaſs of *Hippocras*, provided there be no danger of a Fever. She muſt keep her Belly warm, muſt not drink her Piſan cold, and muſt lay warm Cloths on her Belly, if her Pains be very troubleſome to her, anointing it with *Oyl of ſweet Almonds*, or applying a *Pancake of Eggs* fryed with *Oyl of Walnuts*, taking care not to Swathe it too ſtrait. The next Morning give her Clyſters made of a Decoction of the Emollient Herbs, with a little *Linſeed* boyled in it, adding *Honey of Roſes* and *Oyl of ſweet Almonds* of each three Ounces, or a little *freſh Butter*, repeating theſe Clyſters as oft as occaſion requires. Some Women as ſoon as they are Delivered, drink the Broth of an old Partridge boyl'd with Leeks, others take a Draught of Milk boiled, to which they put five or ſix *Walnuts* pounded with a little *Sugar*, and ſo ſtrain all hot through a Linen Cloth, but theſe Remedies are inſignificant, if the pains ariſe from any extraneous Bodies retained in the Womb; for theſe muſt neceſſarily be expelled, and when that is effected, the Pains will ceaſe of their own accord, except the Blood happen to leave any Clods, and if ſo, theſe will not fail to produce as ſharp Pains as thoſe after Labour.

If the Cleanſings which were copious before, happen to be ſtopt on a ſudden, vehement and ſharp Pains will follow, and care muſt be taken to procure an Evacuation of them by Clyſters, Hot and Aperitive Fomentations applied to the Privities, and Bleeding in the Foot.

As for the Pains in the Back and Groins, which proceed from the great extenſion of the Ligaments, they are to be removed by Reſt, and a Regular way of Living.

Of the Cleanſings, and the Signs when they are Good or Bad.

Thoſe Cleanſings are good which are Bloody the firſt days, and after loſe that colour and by degrees become white. Their Conſiſtence ought to be uniform without any concretions or clods, farther they ought to be void of all Acrimony and ill Scent, and come away in a moderate quantity.

They muſt not continue bloody longer than the firſt days, otherwiſe inſtead of Cleanſings, there would be a dangerous Hæmorrhage. When they gradually loſe their Red Colour, and grow White, it is a ſign the Veſſels begin to cloſe,

and when their Consistence is equal without any Clods or concreted Matter, it is certain there is no mixture of any Heterogeneous Substance with them; when they have no ill Scent or Acrimony, it is evident there is no Inflammation or Corruption of the Womb; In the last place when they flow moderately, the Superfluities only are discharged, but when they flow in great Quantity, the Woman is exceedingly weakned, seized with Convulsions, Swooning Fits, extremely emaciated, and continues pale for a long time, and her Thighs and Legs swell, and become Hydropick.

Of the Suppression of the Cleansings, and the Accidents which follow thereupon.

When the Cleansings are supprest, the Humours corrupt by their long stay in the Womb, or cause some Inflammation. If the Cleansings happen to be supprest in the first Day, there ensues an acute Fever, a vehement Pain in the Head, Pains in the Breast, Reins and Back, a Suffocation and an Inflammation, which extends all over the lower Belly, and this becomes distended. Besides this, the Woman finds a great difficulty of Breathing, stoppage at Stomach, palpitation of the Heart, *Syncopes*, Convulsions and *Delirium*, and these Symptoms frequently prove Mortal to her. If the Suppression continues, there is great danger of an Abscess in the Womb, or perhaps of a *Cancer* or *Apothumes* in the lower Belly, *Sciatica's*, Lameness or Inflammations, and Abscesses of the Breasts, according as the Humours take their Courses, and these Suppressions are more dangerous by much, than those of the Courses.

A Looseness sometimes is the cause of the Suppression of the Cleansings, and sometimes it proceeds from a disorder of the Spirits caused by a violent Fear, Sadness, or Dejection of Mind, Anxiety, or any dismal Apprehension. Great Cold constricts the Vessels, and coagulates the Blood in the Womb, Cold Drink, and Restraining Meats have the same effect, and very much stirring diffuses the Humours through the whole Body, and hinders their discharge by the Womb.

To bring the *Lochia* well down, let the Woman avoid all perturbations of Mind; let her lie in her Bed with her Head and Breast a little raised, (keeping her self very quiet, that so the Humours may be more easily carried downwards) let her observe a good Diet, something hot and moist; let her rather use boil'd Meats than roasted, and if she be any thing

thing Feverish, drink Broths only with a little Jelly, avoiding all binding things, and let her Ptisan be made with Aperitives, such as Roots of *Succory*, *Dogs-grass* and *Asparagus*, with a little *Anise-seed* and *Hops*, and every other time let her take a little Syrup of *Maiden-Hair* in a Glass of the Ptisan, and carefully shun cold Drink. Let Clysters be given her, and her lower parts fomented with an Emollient and Aperitive Decoction made of *Mallows*, *Marsh-Mallows*, *Pellitory of the Wall*, *Camomil*, *Melilot*, Roots of *Asparagus* and *Linseed*, with which Decoction the Womb may likewise be injected, and with the remaining Herbs let a Cataplasm be made, adding a little *Oyl of Lilies* or *Hogs-grease*, and apply this very hot to the Belly. Besides this, let her Thighs and Legs be strongly rubbed down, bathing them with the same Emollient Decoction very hot. But here bleeding must by no means be forgot, and if the Woman be very Sanguine, first bleed her in the Arm, and after when the Symptoms are abated, in the Foot.

Of the Inflammation of the Womb after Delivery.

Very often the stopping of the *Lochia*, do's cause an Inflammation of the Womb, and is the Death of most Women to whom it happens. Sometimes this Inflammation arises from some Hurt or Bruise.

An Inflammation of the Womb may be known, by being much more swelled after Labour than is requisite, the Woman feels a very great Heaviness in the bottom of her Belly, and that is swelled and blown up almost as big as before Delivery, she has a difficulty in making Water, and going to Stool, or she perceives her Pain encrease in voiding her Excrements (because the Womb presses the *Rectum*, and by its Proximity, communicates the Inflammation, as well as to the Bladder) to which add, that in this case there is a high Fever, and great difficulty of Breathing, and a Hiccough, Vomirings, Convulsions, and Death soon follows if not timely prevented.

Contusions of the Womb often cause Abscesses and Schirous Swellings, which continue for a long time, and sometimes end in incurable *Cancers*.

As soon as the Womb appears to be inflamed, extract or procure the expulsion of all extraneous Bodies, which may happen to be lodged in it, without doing the least violence to it for fear of exasperating the Malady; correct the Hu-

mours by a cooling Diet, and let the Patient use Food that Nourishes little, drinking only Broth (but not too strong) made of *Veal* and *Pullets*, with cooling Herbs, such as *Lettuce*, *Purslane*, *Succory*, *Borage*, *Sorel*, or the like; let her abstain from Wine, and drink a *Ptisan* made of the Roots of *Succory*, *Dog-grass*, *Barley* and *Liquorish*; let her keep her self very quiet in her Bed, and not be Swathed too strait; let her Body be kept open with simple Anodyne Clysters, without the least sharpness, for fear of causing Throes, which extremely pain the inflamed part, and of all Passions of the Mind, let her especially avoid Anger.

The Redundancy of the Humours may be evacuated, and diverted by bleeding; first in the Arm, and after in the Foot if there be occasion. It is convenient to cover the Belly with *Galen's Emplaster* to cool it, or embrocate it with Oyl of *sweet Almonds* mixt with a little *Vinegar*. Injections may likewise be made into the Womb, but these must be cooling only, without the least Astringency, (such as are made of *Barley Water*, with Oyl of *Violets*, or warm *Milk* are very proper) observing to use nothing which is excessively cold, avoiding all sorts of Diureticks, and keeping the middle way in the Cure, for fear of inflaming the Womb by the use of hot things, which provoke the Flux. Bleeding is good for the making an Evacuation, without any of these consequences. But observe here, all Purges how mild soever, are hurtful in this Case, as well as in all Inflammations and Fluxions on the Womb, even the least that can happen.

Sometimes an Inflammation of the Womb is converted into an Aposthume, which yields a great quantity of Matter; in this case you must be contented with a good Regimen and Detergent Injections to carry off the Pus, and for this purpose you may make use of a Decoction of *Agrimony* with *Honey*, or *Syrup of Wormwood*, adding (if the Corruption be great) a little *Spirit of Wine*.

If the Aposthume degenerate into a Cancerous Ulcer, it will only admit of a Palliative Cure.

Of Schirrosities of the Womb.

Schirrous Swellings frequently proceed from the application of Cold and Restricting Medicines to the Womans Belly, or injecting something of that kind into the Womb.

If the internal Orifice only is Schirrhous, the Womb is not larger than the common size ; but if the whole Body of it be affected, it is exceedingly tumefied, and this often happens upon an Inflammation after Labour, or upon some disorder or suppression of the Courses. For the more certain knowing there is a Schirrosity in the Womb, lay your Hand on the Womans Belly, or introduce your Finger into the Womb, and you will find it big with an extraordinary hardness. The inner Orifice is larger, harder, shorter, and more unequal, than it ought if there be no Inflammation, or the *Schirrous* be not disposed to Cancerate, it is indolent, but if it be inclined to either of these, the Pain is very great.

If the Womb be Schirrous, the Woman finds a great Lassitude, a weight at the bottom of her Belly, feels Pains in her Reins, Groins and Hips, and has a frequent Motion to make Water, and these Pains increase when she makes an effort to void her Excrements, because the Womb compresses the *Rectum* and the Bladder by its Weight. The Courses are entirely suppressed, or in very small quantity, or irregular, which is occasioned by the Obstruction of the Part.

The best way to begin the Cure, is by bleeding in the Arm, and gentle Purging, for violent Purging in this case is hurtful, and exasperates the Disease, Emollient Oyls, Greases and Cataplasms applied to the Belly, and emollient Injections into the Womb are serviceable, after which the Patient may use the Whole or Half-bath. After she has for several days been treated in this manner, let her bleed in the Foot, refrain from Copulation, and observe a cooling Diet to allay the Heat of the Blood. Thin Milk, especially that of Asses, is good in this Distemper, but the drinking the Mineral Waters, is yet better.

Of a Cancer of the Womb.

This is commonly the consequence of a Schirrosity, Inflammation or Aposthume, after Labour. Ill conditioned Whites, and virulent Gonorrhœas of long standing, conduce very much to this, by the erosion of the Womb.

It sometimes happens to Women upon a cessation of their Courses, because the Vessels being stop'd by degrees, the Blood brought to the Womb, stagnates, corrupts and ulcerates the substance of the Part, which soon becomes Cancerous.

When a Woman has a *Cancer* in the *VVomb*, she feels a pricking pain, and a heaviness which is caused by the sharpness of the Humours, and the bearing down of the Womb. This Pain extends to the Reins and Groins, and the Patient feels a great weight at the bottom of her Belly, and a general Lassitude of the whole Body; she has a difficulty of Urine, and a Serous, Foetid, Virulent, Blackish Gleet comes from the Womb. Sometimes the Blood comes away wholly fluid, and sometimes it is concremented. When the Ulceration is in the inner Orifice of the *VVomb*, it may be perceived by the Finger, or may be seen by the help of the *Speculum Matrix*; but if it be in the bottom, there is no way to know it but by the condition of the Matter which comes from it, and by the Symptoms above mentioned. These Ulcers are very unequal, Sordid and Stinking, and the Corruption is sometimes so great, as to breed Worms.

Cancers of the Womb are incurable, and only admit of Palliating Remedies, which abate the violence of the Pains. The Patient must not take any thing sharp, either inwardly or outwardly, for fear of increasing the Disease and Pain, and hastning her End.

Women who have a *Schirrhus* or Apostem in their Wombs, or who are subject to Flooding, or have a Cessation of their Courses, especially when they are advanced in years, are most of all subject to *Cancers*. Such Persons as are threatned with this Disease, upon the account of the ceasing of their Courses, have no better Expedient than to bleed in the Arm at convenient times, to supply the defect of that Evacuation, and by this means prevent too great a Redundancy of Blood and Humours in the Womb; and this they ought to do for several years together, till those Vessels which conveyed the Blood are very much diminished. If such a Woman has been very subject to frequent Hemorrhages, let her refrain from Copulation, because this Action brings Blood into the part; let her observe a cool and moist Diet, and shun all Aperitive, Diuretick or Violent purging Medicines; let her drink new Milk from the Cow to sweeten the Blood, and frequently drink Broths made of Pullets, whose Bellies were first stuffed with the cold Seeds. The Cow whose Milk she drinks must be sound and not overheated, fed with good Pasture, and one who has not lately Calved; for all Errors of this kind are dangerous.

Of a Loosness hapning to a Woman newly laid.

A Loosness when it happens to a Woman soon after her Delivery is dangerous, because it diverts the Cleanings from flowing to the Womb, and by this means often proves fatal to the Patient. That which makes this case dangerous, is, that Remedies proper to stay the Flux, such as Astringents and Purgatives, are not to be admitted of, especially at first. In this case therefore give the Patient strong Broths to strengthen her, and abate the Flux, give her Anodyne Clysters made of a simple Decoction of *Bran*, or the cooling Plants either alone, or with the addition of *Milk*, or the *Yelks of Eggs* to abate the Pain, or let her take some grains of *Laudanum* in the Yelk of an Egg. If the Loosness be accompanied with a Fever, let her bleed. However, if there be a visible danger of the Womans losing her Life by the continuing of the Flux, use all common Remedies in this case, without the least Scruple, and when that is stopt, attempt to procure an evacuation of the Cleanings, which for a time were suppressed.

Of Ruptures of the Belly in Women with Child.

The Womb sometimes is distended to so large a size, that it breaks through the *Peritoneum*, and causes Ruptures so large, as to contain the Womb and Child in it. These Ruptures sometimes happen above and below the Navel, between the *Musculi Recti*, in the Navel it self, and in the Groins, which are the weakest parts of the Belly. They commonly proceed from great Straining of a Woman in Labour, or vehement Vomittings, or violent and frequent Sneezing, or some accidental blow on the Belly. This Disease causes want of Digestion, Vomiting and severe Cholick Pains, and often when the Gut which is fallen cannot re-enter, Death is the Consequence, or at least there is a necessity of making an Incision into the Belly, as in a *Bubonocoele*.

To avoid Accidents of this Nature, the Woman must be forbid to lace her self, or straiten her Belly, that it may have room to extend it self every way. But if she happen to have a Rupture, she must wear a Bandage with Compresses adjusted to the Part, to prevent the Guts from intruding themselves into the Swelling. If the Rupture be in a place

into which the Womb can insinuate it self, the Woman must have an especial care to prevent this Fatal Accident, by the help of good Bandages, and she would do well to keep her Bed during her being with Child.

Of an Inflammation of the Breasts after Delivery.

If a Woman with Child has received a Blow on her Breasts, or compressed them by lying on them; or has left too great a quantity of Milk in them, without drawing them, an Inflammation will infallibly ensue, which sometimes is the cause of Aposthumes or Schirrosities, which degenerate into *Cancers*. The Breasts being very sensible when they are inflamed, soon produce a continual Fever with *Deliriums*.

The best way to prevent an Inflammation of the Breasts, is to procure a good Evacuation of the Cleanings, and if they are supprest to provoke them, that so all the Humours which flowed too plentifully to the Breasts, may take their course downwards. For this purpose bleed her first in the Arm, and then in the Foot. In the mean time Embrocate the Breasts well with a Mixture of Oyl of *sweet Almonds*, and after that apply *Galen's cooling Emplaster*, with a third part of *Populeum*, or a Cataplasim made of the *Settlings found in a Cutlers Grindstone Trough*, and Oyl of *Roses* with a little *Vinegar*, or if the Pain be violent, make a Cataplasim with the *Crumb of White Bread*, *Milk*, *Oyl of sweet Almonds*, and the *Yelks of Eggs*, and apply it to the Breasts, and over that lay Compresses dipt in *Oxycrate Plantane Water*. But great caution is to be used in Astringent Remedies, lest if they be too strong, they occasion a *Schirrus*, which in time may become *Cancerous*.

After the height of the Inflammation is over, let Discutients be used to dissipate the Milk, which flows in too great abundance to the Breasts, but the best way in this case, is to draw them by Sucking; for if any great quantity be left in the Breasts, it will necessarily Suppurate. However it is necessary to use discussing Applications first, because Sucking brings Milk into the Breasts. But if the Milk runs off it self leave it, for this is enough to empty them. Milk may be resolved by applying a Cataplasim of *pure Honey* to the part, or rubbing them with a red Cabbage Leaf, having first deadned it by the Fire, and taking care not to straiten the Breast. The following Discutient is very good. Take a good Red Cabbage

bage and boil it in *River Water* till it be soft, and the Water evaporated. Pound this in a Wooden or Stone Mortar, and after pass it through a Sieve, adding *Honey* and *Oyl of Camomil*, and apply this Cataplasim to the Breasts.

Let the Woman in the mean time use a cool Diet, not very Nourishing, to prevent breeding too much Chyle. Let her keep her Body open, that so the Humours may discharge themselves downwards, while the Inflammation remains; let her lie in Bed on her Back, because when she is up, the weight of her Breasts increases the Pain. On the fourteenth or fifteenth day after her Delivery, when the Cleansings are pretty well come away, and she is free from a Fever, she may be purged as often as seems convenient. If notwithstanding the use of these Remedies the Pain do's not abate, there is reason to believe there is Pus in the Breasts.

Of the Curdling and Clodding of Milk in the Breasts.

About the fourteenth or fifteenth day after Labour, the Milk often is apt to Curdle, and then the Breasts become hard, unequal, and rugged, without any Redness, and all the Glands filled with curdled Milk, may easily be discerned; The Woman finds a great Pain, and cannot Milk them as before, she finds a Shivering in her Back, which seems to be like Ice. This is followed by a Fever of four and twenty Hours continuance, and sometimes less, if the clodding of the Milk do not turn to an Inflammation of the Breast, which will undoubtedly happen, if it be not emptied or dissipated.

This clodding of the Milk, for the most part proceeds from the Breasts not being well drawn, either because she has too much Milk, or the Infant is too weak, or she has no desire to be a Nurse; for the Milk in these cases remaining in the Breast, sours and clods. This Accident may sometimes happen from taking Cold, or keeping the Breasts not well cover'd.

The most certain Remedy in this Case, is to draw the Breasts speedily, till they are well evacuated, but because the Woman is not soft Milcht, and the Child cannot draw them strongly enough, let another Woman draw them till the Milk comes freely, and then she may give the Child Suck; and to the end that she may not afterward breed more Milk than the Child can draw, let her use a Diet that yields but little Nourishment, and keep her Body open.

pen. But when it happens the Woman neither can nor will be a Nurse, then her Breasts must not be drawn, for fear of attracting more Humours, for the Disease will ever recur, if they be not empried; wherefore it is necessary to prevent the coming of any more Milk into them, and to resolve and dissipate that which is there. For this purpose the Woman must be bled in the Arm, have strong Clysters given her. Bleeding in the Foot and Purging, are very serviceable in this Case, and to resolve and dissipate the curdled Milk, apply some Cataplasm above recommended, as that of pure *Honey*, or the *four Meals* boiled in a Decoction of *Sage*, *Mint*, *Smallage* and *Fennel*, mixing with it *Oyl of Chamomil*, with which *Oyl* the Breasts may be well anointed. Clothes laid over pots of *Salt Butter* are very good, after having used all things proper to resolve the concremented Milk.

Of Apostems in the Breasts of a Woman new laid.

If a Woman feels a great Pain, and there be a stronger Pulsation in one place than another, a Hardness, a Livid Colour, with a Softness in the midst, it is a sign the Breasts will Apostemate.

To suppurate the Apostem, apply on the Breasts an Emollient and Ripening Cataplasm made of *Mallows*, *Marsh-mallows*, with their Root, *Lily Roots* and *Linseed* bruised, and boiled to a Pap, that it may be pulped through a Sieve, and so no hardness may be left to hurt the Breasts, which at that time are in great Pain; after mix a good quantity of *Hogs-grease* or *Basilicon* with it, or lay a little Cloth thick spread with the same *Basilicon*, upon the place where it is likely to break, and the Poultis all over it, renewing it twelve Hours after, or at farthest next day, continuing this Remedy till the Apostem be ripe. Or you may make use of the *Emplastrum Divinum*, malaxed with *Oyl of Lilies*; this is preferable to all others of the like Nature, for this purpose. As soon as the Apostem is Ripe, it must be opened, if it open not of it self. The time when it is fit, may be known by the ceasing of the beating the Woman felt before in her Breasts, and that the Pain and Fever is very much abated, and then besides the middle of the Apostem is raised to a Point, and very soft, and the contained Matter may by the Finger be perceived to fluctuate. The Apertion must be made with a Lancet, or with a grain or two of some Caustick,

Caustick, making it large enough to evacuate the concreted Matter. It is best to use the Lancet, because there is no loss of Substance, and the Scar is not so Disfiguring. The Orifice must be made in the most commodious place, for the Evacuation of the Matter, taking care that none of the large Vessels near the Arm-pits be opened. After that all the Matter and purified clodded Milk is discharged, deterge the Apostem after the ordinary manner, observing not to make the Tents too long, or too hard, but of very soft Dossils of Lint, without thrusting them too far in, and fasten a Thread to the first to draw it out, if there be occasion, because these Apostems are most commonly deep. If there be great Pain, dip the Pledgits in *Oyl of Eggs*, or *Basilicon* mixt with some Digestive, if there remain any thing yet to Suppurate; after this deterge the Ulcer with *Honey of Roses*, or *Unguentum Apostolorum*, laying on the *Emplastr. Divinum*, to soften and discuss the remaining hardness.

If there be several Apostems in different places of the Breast, in this case there is no need of laying open every one of these small Holes, but it suffices to make one or two Apertures in some depending part large enough, because the Breasts are Spungy, and these Apostems communicate with each other. But the most prompt Remedy, is to drive the Milk quite back; and for this purpose give the Woman Clysters, and purge her frequently, confining her to a Diet which is not very Nourishing.

You must not always stay till the Cataplasms break the Abscesses, and sometimes there is a necessity of opening them with a Lancet, because if the Matter Stagnate too long in the Breasts, it will corrode that Glandulous Part, and form Sinuosities very difficult to cure.

Of the Excoriation and Loss of the Nipples.

Very often Women that are Nurses, and especially the first time, and subject to have their Nipples excoriated, for the small holes of the Nipples not being sufficiently opened, the Child takes more pains to Suck, than when the Breasts do almost run of themselves. Sometimes these Chaps and Excoriations, do so encrease by the Childs continual Sucking, that in the end it quite takes the Nipple off from the Breast, and the Woman is no longer capable of giving Suck, and there remains an Ulcer very hard to be cured.

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This may sometimes happen from Childrens biting and mumping the Nipples, and sometimes their Mouths are so hot, that they make the Nipples sore, as when they have those little Ulcers called *Apthæ* or a Thrush, and much sooner if they have the Pox, with which they infect their Nurses.

These Excoriations if they are neglected, at length become very Malignant Ulcers. Wherefore as soon as they begin, let the Woman forbear giving her Child Suck, till they are perfectly cured, and in the mean time drive back the Milk, for fear of an Inflammation, from too great abundance of it. If only one Nipple be sore, she may give Suck with the other; to these sore Nipples Desiccative Medicines must be applied, as *Alom* or *Lime-water*, or they may only be bathed with *Plantane Water*, laying on them small soft Rags dipt in those Liquors, or apply an Emplaster of *Cerufs* or *Pompholyx*, or *Starch*; but an especial care must be taken that nothing be applied which may disgust the Child, for which reason many only use *Honey of Roses*.

To prevent Hurts in these Parts, and hinder the Womans Clothes from cleaving to them, let a little cap of Lead be put on, as well to defend them, as to give Issue to the *San'es*, which proceed from those little Ulcers, or that the Milk which distills from the Breast, may pass that way.

If the Child has sucked off the Nipple, the Milk must then be quite dried away, because otherwise it would be impossible to cure these Ulcers, which in time would become callous and malignant.

If the Child be put to another Nurse, and the Ulcers in its Mouth have no Malignity, 'tis enough to wash them with *Barley Water* mixt with a little *Juice of Citron*, and let the Nurse use a cooling Diet.

When the Nipples are quite lost, the small Holes are closed up by the Ulcers, but if notwithstanding she shall desire to give Suck, another Woman may by degrees make her new Nipples, after the Ulcer shall be perfectly healed, whose Sucking by degrees will draw them out, and by this means unstop the Root of the old Nipples; or if she have no Woman to Suck her, let her use a Glass Instrument, with which she may her self Suck them five or six times a Day, and to shape them and preserve them when they are drawn out, let her put on them a small cap of Wood.

Of the Swelling of the Legs and Thighs in a Woman newly laid.

If the Swelling be very great, there be an Inflammation, and it proceed from Suppression of the Cleanings; if there be a Fever, difficulty of Breathing, a great Tension and Pain in the Belly, the case is dangerous. If there be but an indifferent Swelling only, without any of the above mentioned Accidents, there is no great difficulty in the Cure.

For this purpose, procure a good Evacuation of the Cleanings, give the Woman an Aperitive Pilsan, made with the Roots of *Fennel*, *Parsley* and *Dog-grass*, with a little *Chrysal Mineral*: Sometimes give her an Ounce of *Syrup of Maiden Hair* in a Glass of the Pilsan, with five or six drops of the *dulcified Spirit of Salt*, and about half a Dram of *Sal Polychrestum*. If she have no Fever, and it be fifteen days after her Delivery, she may be purged.

Of the Suffocation of the Womb after Delivery.

Some Women in Hysterick Fits have a high Pulse, others a very low one, as it were sunk in, others have scarce any at all; some become pale and motionless, others have a good colour in their Checks, and have several Convulsions, some have not the least appearance of Breath, and others breath with great Difficulty, and great Heavings of the Breast; some are insensible, without remembring any thing they have done, or said; others never lose their Reason or Judgment, some are Gay and Merry, Laughing and Singing, others are Sad and Dejected. Some are attacked with frequent Fits, others very seldom. The Fits sometimes last for several Hours or Days, and sometimes are suddenly over. The most ordinary Signs of the Hysterick Passion, are difficulty of breathing, which causes a Suffocation with a great constriction of the Throat, as if the Patient had a Morfel which she could not swallow, and the Throat were griped with a Mans Hand. There is a great Weakness and Palpitation of the Heart, *Nausea's*, and sometimes a Flux of Water and Serosities from the Mouth; frequent yawning, sometimes is a Fore-runner of the Fit. The Woman feels a Pulsation of the Arteries in the bottom of her Belly, a leaping and contraction of the Womb, a Rustling of wind in the Stomach

Stomach and Guts which distends them, and bears up the Diaphragm, sometimes she is delirious in the Fit, and has Convulsive Motions preceded by a Pain, Weight, and Dizziness of the Head, Dazling of the Eyes, Drowiness and Forgetfulness. Sometimes after these Convulsive Motions, she is thrown into a Mortal Apoplexy, or a Palsie of one side, which continues for several years.

To prevent this Distemper, if there be a Suppression of the Cleanings, bring them down by relaxing all the parts round the Womb, and the Thighs by a Half-bath, by bleeding in the Foot and Purging. If it be a Big-bellied Woman who labours under this Distemper, let her only Bleed, and keep her Body open with Clysters. The use of the Mineral Waters is admirable, to prevent the Hysterical Passion, in case the Patient be not with Child. If the Suffocation proceed from any extraneous Body in the Womb, extract it, or procure its expulsion by Medicines. Let the Patient avoid all sweet scented things, all Sweet-Meats, or any thing prepared with Sugar, all melancholy and disturbing Passions, and keep her Body open. If she be a Married Woman, let her often embrace the privileges of that State, if not, let her keep a cooling Diet, using Emulsions and Bathing.

In the Fit which is ordinarily attended with difficulty of Breathing, Suffocation, Weakness, Palpitations of the Heart, it is usual to present to the Patient things which have a very ill Scent, as *Partridge Feathers*, or Soles of Shoes burnt. Some sling a Dram of lighted *Camphire* into a pot of Water, leaving it till it be extinguished, and give this Water to the Patient to drink; or give two or three drops of Oyl of *Amber* in a Spoonful of Broth, or *Orange-flower Water*. But the best way is to unlace the Patients Clothes, and give her a Spoonful or two of *Cinnamon-Water* or *Aqua-vita*; this is a good Cordial, and promptly dissipates the Windiness in the Stomach, which is the cause of these Suffocations. A Spoonful or two of Wine alone is very good. Smelling to *Spirit of Wine* is better than Vinegar. The scent of burnt Paper, or a *Musket Match*, is very good. If she be with Child, she may not smell too stinking Scents, for fear she Miscarry. If she be not with Child, let her take Sneezing Powders, with Powder of *Betony*, or *Tobacco* without Perfume. You may put a grain or two of Salt into the Patients Mouth, to bring away the Water and Serosities which flow thither in great abundance.

If any large Evacuations precede the Fit, as a great Loosness, Flooding, or an immoderate Flux of the Whites, or a great abundance of the Cleansings, and the Womans Pulse be low and languid, her Face pale, and her Body cold, you must forbear Bleeding; on the contrary, if she have a Florid Colour in her Face, her Pulse be high, and there be a Suppression of the Courses or Cleansings before, and she have Convulsive Motions, I think Bleeding is very proper, first in the Arm, and after in the Foot.

Of the Whites.

It is very difficult to distinguish Whites in Women, from virulent *Gonorrhæa's*. In the Whites the Matter is whiter, more serous, especially if it be copious, and less fetid than in *Gonorrhæa's*. On the contrary, in Venereal Cases it is more stinking, thick, blackish, yellowish, greenish, and sometimes is of a redish Colour, by the mixture of a bloody Serosity. When a Woman has the Whites, the Courses become irregular; sometimes instead of her Courses, she has a Flux of Blood which becomes serous, and appears like the Water in which Flesh has been washed; when it is a little abated, after some time some clods of black corrupted blood come away among the putrid Matter. A Woman who has the Whites, can lie with her Husband without pain, but she who has an Ulcer cannot. The Matter which comes away in the Whites, most commonly is White, Serous, not unlike Whey, without any ill Scent, tho' sometimes it is yellow, stinks, and by its Acrimony causes a great Smarting of the Parts. It is very difficult to distinguish the Whites from *Gonorrhæa's*. Women with Child are more subject to this Distemper, which is occasioned by the Suppression of their Courses. Few Women are wholly exempt from this inconvenience, but at some time or other labour under it; but some are much more subject to it than others. Women who have not their Courses regularly, those who are Phlegmatick, have a soft Skin, are pale coloured, or lead a Melancholy Sedentary Life, are most of all subject to the Whites; but young Girls who are not of an Age to have their Courses, never have them. The Whites weaken the Woman, humect and relax the Womb to that degree it cannot contract and close it self, and by consequence cause Barrenness. The Womans Countenance becomes pale, her Legs swell, she loses her Appetite, has Pains in her Back, Weakness,

Weakness, Palpitation of Heart, and Hysterick Fits. If the Whites continue long the Woman is emaciated, and becomes Hectical; Nay, sometimes such a Relaxation of the Womb ensues, that it becomes Cancerous if neglected.

For the Cure of this Distemper, Bleed and Purge the Patient well, and prescribe a good Diet to her; let her go to the Baths, and after drink the Chalybeate Waters, or others of the like Nature. Phlegmatick Women whose Flesh is tender and soft, ought to drink the hot Waters, as those of *Bourbon* and *Vichy* in *France* [or the Bath in *England*] or a Sudorifick Decoction made of the Roots of *China* and *Sassa-parilla*, taking for a fortnight before, a Glas of a Laxative and Diuretick Ptsan made of *Maiden Hair*, Roots of *Dog-grass*, *Asparagus*, *Smallage* and *Fennel*, with a Dram of *Senna*, adding every three days, four or five drops of the *dulcified Spirit of Salt*, or half a Dram of *Sal Polycrystum*; and during this time, let her observe a good Diet, refraining from Copulation, and avoiding all Melancholly and Dejection of Mind. The most proper time to begin the use of Medicines, is immediately after the Courses are over. After these Medicines, the Patient may use Astringent Injections made of equal parts of *Plantane* and *Myrrh Water*, but she must forbear when the time of the Courses is near, for fear they cause a Suppression; for my part, I would not advise any Woman to use Stryptick Applications, because this part is the common Sink, where all the Filth of the Body is discharged.

When the Whites are very Acrimonious, and cause a smarting of the Parts, *Barley-Water* or *Whey*, or simple Water may be injected three or four times a Day, (except in the time of the Courses,) to allay the Heat and Pain, prescribing a good Diet, and between whiles, purging her till the Cure be compleated.

Tho' the Patient may seem to be cured, and the Whites cease, or at least are very much abated, the Woman must notwithstanding frequently take Medicines, and all her Life observe a good Diet, otherwise she will be in very great danger of a Relapse.

Of Dieting and ordering a New-born Babe.

It is not usual to give a Child Suck, till ten or twelve Hours after its Birth, and then the Nurse must milk a little into

into its Mouth and on its Lips to give it a Relish, and when the Child has taken the Breast she must squeeze it till it be accustomed to Suck of its own accord.

If a Nurse have plenty of Milk, give the Child no other Food for the first two Months; but for the first two or three Days, give it but a little at a time, for fear of overcharging its Stomach, and after encrease the quantity. When the Child is grown a little bigger, you may give it either in the Day or Night, as much as it desires, a little and often, for if it take too much at a time, it vomits it up, the Stomach being too weak to digest it. But if you can govern the Child, it would be better to give it the Breast but once every two Hours, and never in the Night-time, unless when it wants Sleep.

After the Child has been fed the first two or three Months with Breast-Milk only, you may give him a Pap made of Flour and Milk, though but little at first, and not too thick, neither lest his Stomach be overcharged. That this may be easier of Digestion, put the Meal in an Earthen Pan into an Oven, as soon as the Bread is drawn, stirring it often to dry it equally. Pap made thus, is much better than the common way; for being made with raw Flour, it is very difficult to boil it well, without consuming the best part of the Milk, leaving the thickest part behind, which by its long boiling loses its goodness. When the Child has taken Pap thus made, which must be but once a day, (especially in the Morning) or twice at most, the Nurse may give it Suck to wash it down into the Stomach, and dilute it there.

If Pap be given to a Child newly Born, as some Women indiscreetly do, it causes Obstructions, Difficulty of Breathing, Gripes, Swelling of the Belly, and Convulsions, of all which Death is the Result, and therefore it is best to forbear the three or four first Months, provided the Nurse do not want Milk.

When the Child has sucked its Fill, let the Nurse lay it to Sleep, not in the same Bed she lies in her self, for fear of over-laying it, but in a Cradle close by her Bed-side, and let her put a Mantle over the Head of the Cradle, to prevent Dust falling on its Face, and the Day-light, Sun-shine, Candle, or Fire in the Chamber from offending it; let her lay it to sleep on its Back with its Head a little raised upon a Pillow, and to make it Sleep the sooner, let her rock gently with an equal Motion, without too great shaking; but that she may not be forced thus to rock the Child every time she

would have him go to sleep, it is best not to use him to it at first. He may sleep at any time in the Day or Night, and ordinarily the better he is, the more he sleeps; however if he exceeds in this respect, let his Nurse carry him in her Arms to the Light, sing some little Song to him, shew him some glittering thing, or dance him in her Arms.

VWhen he is in the Cradle, let it be so turned that the Light may be directly in his Face, that he may not be tempted to look aside; for doing so often, his Sight will be perverted, and he become Squint-eyed. But the best way is to let him see no Light at all.

The Nurse must open and change the Child, at least twice or thrice a Day, and sometimes in the Night too, if it be necessary to cleanse him from his Excrements, and shift the Blankets, which must be put into a Bucking-Tub, and not slightly washed, as most hired Nurses do; because there comes a certain Salt from the Excrements, which insinuates it self into them, and causes a great itching, smarting, and excoriation of the Childs Body.

The Child must always be opened before the Fire, and his Blankets and Clouts well warmed and dried, before he be put into them, lest their cold and dampness, cause a Cholick and Gripes. The Nurse must put Rags behind his Ears, and under his Arm-pits, to dry up the Moisture. During the first four or five Days, she must be careful not to make the remaining part of the Navel-string fall off too soon, before the Vessels be closed, and every time she opens the Child, she must see whether the Navel for want of being tied fast do not bleed; and after the end is fallen off, let her still for some time Swathe the Navel, continuing to keep a Compress on it till it be well cicatrized, and something sunk in. Besides this, let her put upon the Mold of the Head under the *Biggin*, another Compress to keep the Brain warm, and prevent the Childs taking Cold. Let her also be very careful not to suffer the Child to cry too much, especially at first, lest the Navel be protruded outwards, and cause an *Exomphalos*, or a Rupture in the Groin. The best way to quiet him is to give him the Breast, and to lay him clean and dry, and present something to amuse and please him.

Some foolish Nurses use to suck the Childs Breast, to draw out the Serosities, and form a Nipple in Girls, but this is a ridiculous Practice; it suffices in this case to apply Rags dipt in *Oyl of Roses* and *Vinegar*, and forbear Swathing the Part too strait.

Of the Weakness of New-born Children.

Children sometimes suffer so much by a bad Labour, that it is difficult to know whether they are alive or dead, not any part of their Body having the least sensible Motion, and being as Blue and Livid, especially in the Face, as if they were choaked. However, you may be assured a Child is alive, if laying the Hand upon the Breast you feel the Motion of the Heart, or touching the Navel-string near the Belly, a small Pulsation of the Arteries may be perceived.

The best help in this case, is to lay him speedily in a warm Bed and Blanket, and carry him to the Fire, and there let the Midwife sup some VVine and spout it into his Mouth, repeating it if there be occasion; let her lay Rags dipt in warm Wine to the Breast and Belly, and let the Face be uncovered, that he may draw Breath the easier, let her keep his Mouth open a little, and cleanse his Nostrils with small Linen Tents dipt in VVhite-wine.

Of Contusions or Bruises of a New-born Child.

Children frequently receive Bruises on the Head in their Birth, and sometimes have a knob near as big as an Egg, especially if the Mother be in Years, and it be her first Child, because the inner Orifice of the VVomb is Callous, and cannot be dilated without great difficulty, and the Midwife sometimes do's much mischief by handling it too roughly.

These Tumours are often so large, that they hinder the Artist from discovering which part presents, and often times make them think it is the Shoulder which they feel. But this Errour is easily discerned, because these Tumours though feeling fleshy, are notwithstanding harder than any Shoulder or Buttock of a Child, which parts are always soft and without Hair, as the Head hath; besides the Bones may be easily perceived, if the Finger being anointed with Oyl or fresh Butter, it can be introduced into the inner Orifice, for the Parts within the Womb are not Swelled. If a Child comes with any part besides the Head, and they remain a long time prest in the Passage, they will swell likewise.

The best way to prevent these sort of Tumours, is to procure a speedy Delivery. To this end grease well the In-

ternal Orifice of the Womb to relax it, and dispose it to give way for the passage of the Child; and as soon as the Child is born, foment the Tumours with *warm Wine* or *Spirit of Wine*, and lay Compresses dipt in the same on them; some Midwives only dip a Compress in *Oyl* and *Wine* beat together. If a Tumour will not be discussed by this means, but comes to Suppuration, the Matter must be let out as soon as is possible, for fear it corrupt the Bones of the Head; In this case it must be opened with a Lancet, and an Emplaster of *Betony* applied on the Wound. If it be any other Part than the Head which is swoln, let it be wrapt in Compresses dipt in a Decoction of *Provence Roses*, *Camomil Flowers*, and *Melilot*.

Some Male Children have the *Scrotum* very much swelled, which may proceed from a Contusion or Waters contained in it. In both these cases, Compresses dipt in *Wine* with *Roses* boild in it, must be applied.

The greatest Mischief is, when by the badness of the Labour or unskilfullness of the Midwife, a Leg or Arm is broken or dislocated; if this happen a Surgeon must be called, and the Part dressed after the same manner as in grown Persons, having regard to the Weakness and softness of the Bone.

Of the Mould and the Sutures of the Head being too open.

Very often Children who come before their time, have the Mould of their Head, and the Sutures open. This arises from the distance and separation of the Bones from one another, which are not steady, but may be moved to and fro, and yield on every side. When this happens, you must not think to bring the Bones together by binding the Head strait, for this would press the Brain which is very tender, and kill the Child. It is sufficient to bind them softly with a small Cross-cloth, to prevent the inconvenience of their being unsteady, and commit the rest to Natures Work, which in time will unite the Bones.

There are some Children which have the Mould open till they are three years old more or less, according to their Strength. In this case, 'tis convenient to cover the Part with a Linnen Cloth three or four times double to prevent taking cold, and to defend the Brain from external Injuries.

It happens sometimes, that although the Bones be big enough to unite in all Parts; yet they are separated from each other in the place of the Sutures, by a quantity of Waters contained between them and the *Dura Mater*, and sometimes between the Skin and the *Pericranium*. or the *Pericranium* and the Skull, and sometimes in the *Sinus* of the Brain it self. If the Water is contained between the Teguments and the Bones, and the Swelling be not very large, the Child may be cured by opening and evacuating the Waters, or discussing them.

Of Gripes and Pains in the Belly of a young Child.

Many Children are so griped, that they cannot forbear crying out Night nor Day. This is the first Distemper which happens to them, and they often die of it.

The principal cause of these Gripes, is the *Meconium* which is contained in their Guts, which by its long stay there grows sharp, and pricks their Membranes, or becoming hard, the Infant cannot void it, nor the new Excrements, which proceed from the Milk which he first Sucks. It sometimes happens because the Child not being able to Suck with ease, he swallows in sucking the Milk with Difficulty, much Air and Wind, which being retained in the Stomach, and sliding into the Guts does distend them, and cause a great deal of Pain.

This Wind is sometimes caused by a Child's taking a greater quantity of Milk than he can digest, or the Woman giving her Breast-Milk soon after Labour, before it be purified, or perhaps because the Child has taken Cold. Very often these Gripes proceed from giving him Pap too soon, or not well boiled; because this is Gross, Viscous, and apt to engender Wind in the Stomach. Worms sometimes by their stirring and biting, do very much torment Children. In the last place, the Midwife may have caused this by forcing back the cold and clodded Blood out of the Navel-string before it be tied.

To avoid these Pains, the Nurse must avoid giving the Child suck till the next Day, lest the Milk mix with the Excrements, and so corrupt and grow sour, encreasing the quantity by little and little, till the Child be used to this sort of Food. If it be the *Meconium*, which by its long stay causes these pains, give them at the Mouth a little Oyl of sweet Almonds or Syrup of Roses, and put a Suppository

made of Beet stalks into the Fundament, or a Sugar Almond dipt in Honey, or a small Clyster.

If the Child cannot Suck, and this proceed from its being Tongue-tied, the *Frenum* must be cut in the manner shall be taught in its proper place, and if the Nurse be hard Milcht, change her for another.

VVhilst the Child is griped give it no Pap, because this Food do's create Obstructions, breed VVind, and often cause Convulsions.

If the Gripes proceed from Worms, lay a Cloth dipt in Oyl of Wormwood mixt with Ox Gall on the Belly, or a small Cataplasim made with Powders of Rue, Wormwood, Coloquintida, Aloes, and the Seeds of Citrons incorporated with Ox-gall, and Flour of Leupines, and if it can take any thing by the Mouth, give it a small infusion of Rhubarb, or half an Ounce of compound Syrup of Succory, having before given it a small Clyster of Milk and Sugar.

VVhen these Gripes are caused by VVind, or any sharp Humours in the Guts, anoint the Childs Belly all over with Oyl of sweet Almonds, or Oyl of Wallnuts, Camomil, and Melilot mixed together (having first warmed them) in which also a Cloth may be dipt to lay upon it, or a small Pancake may be made with an Egg or two fryed in Oyl of Wallnuts; and applied to it, or you may give the Child a little Anodine or Carminative Clysters as occasion requires, ever keeping him very warm.

Of the Inflammation, Ulceration, Shooting forth, or Rupture of the Navel of a young Infant.

If the Navel-string fall off before it be entirely closed and cicatrized, there happens an Inflammation and Ulceration at other times; (although it be outwardly healed, yet not being so within) it is dilated, and protruded out till the Tumour be as big as an Egg, which is called an *Exomphalos*. This proceeds from the continual cries of the Child, or some violent Cough.

In this case endeavour by all means to appease the Childs Cough, and quiet it to prevent its continual Crying, without which the Tumour would daily encrease. If the Childs uneasiness proceed from the Gripes, they may be remedied in the manner above directed. If the Navel be inflamed, apply Galen's Cerate mixed with a moiery of Populeon, or a small

small Compress dipt in a mixture of Oyl of *Roses* and *Vinegar*, or *Unguent of Roses* with *Album Rhasis*.

When the Ligature is come away, and the Navel is Ulcerated, apply Desiccatives and Restraining Medicines, as Rags dipt in *Lime-water*, which is not too strong, or *Plantane-water* with a little *Alum* dissolved in it. If the Ulcer be very small, lay on it a little Pledgit of dry Lint, some add a little Powder of a rotten Post. These Medicines are better than Emplasters which are never so drying, by reason of the Greases and Oyls in their Composition, *Ceruss Emplaster*, or *Desiccativum Rubrum*, or *Diapompholygos* are the best, in applying which, you must observe to lay a Compress of Rags, and keep it on by Swathing the part, till the Navel be entirely formed, for the Child by its crying breaks the Vessels, or causes an *Exomphalos*.

As to the Rupture of the Navel in young Children the Cure of it must not be undertaken otherwise than by Swathes and Compresses fitted for the purpose, at least till such time as they are grown to a competent bigness, and then if these do not effect the Cure, you may perform the Operation.

If after the Inflammation there ensues an Apostem, the Child most commonly dies; for if it be opened to discharge the Matter, the Guts protrude themselves out, as soon as the Child begins to cry. If the Surgeon be sollicit-ed to make the Operation, let him deliver his Prognostick, that so the Childs Death if it should so fall out, may not be imputed to him.

But if the Apostem be small, and the Child has Courage and Strength enough to endure it, let him open it a little, which possibly may free the Child from this inconvenience.

Of the Smarting, Redness, and Inflammation of the Groins, Buttocks, and Thighs of an Infant.

If the Nurse do's not keep the Child very clean, the Acrimony of the Excrements will not fail to cause a Redness and Smarting, and Inflammation of the Groins, Thighs and Buttocks. She must therefore keep it very cleanly, use a cooling Diet her self, and refrain from all things which are apt to heat the Blood, that so the heat of the Childs VVater may be allayed. Let her bath the part inflamed with *Plantane Water*, adding a fourth part of *Lime Water*, or if

the Pain be very great, foment it with luke-warm *Milk*: Many Women use *Powder of a rotten Post*, or a little *Mill-dust*, which they strew on it. *Album Rhasis*, or *Diapompholygos* spread on a Rag in form of an Emplaster, is not amiss, but the best of all is a Lotion of *Saccharum Saturni*, the effect of which may be seen in an Hour after. When the Nurse opens the Child, let her be careful to wrap the Inflamed parts with fine white Rags, that they may not by rubbing together, be more galled and pained.

Of Ulcers or a Thrush in the Mouth of a Child.

Very often the Milk of a Nurse that is Red-hair'd, addicted to Drinking, or very Amorous by its Heat and Acrimony, causes small Ulcers in a Childs Mouth, which are called *Aphthæ*, and sometimes Cankers. Some of these are simple and superficial, and are cured with much ease, some again are ill conditioned, and caused by a Pocky Venom, and happen after Malignant Fevers, or are Scorbutick and putrid; these spread themselves to the Throat, make deep Escars, and often are Mortal to Children, because they want Strength to undergo the Cure.

To cure Ulcers in the Mouth, you must take care to allay the Heat of the Nurses Milk, prescribing her a cooling Diet, (and Bleeding and Purging her if she be Plethorick) and wash the Childs Mouth with *Barley* or *Plantane Water*, and *Honey of Roses*, or *Syrup of dry Roses*, mixing a little *Verjuice*, or *Juyce of Citron* to deterge the Viscid Humours, and cool the Mouth. For this purpose, fasten a dry Rag to the end of a little Strick, and dip this in any of the above-mentioned Medicines, apply it gently to the Ulcerated part, to prevent the Inflammation from being encreased by a violent rubbing. During this, the Childs Body must be kept open.

If the Ulcers participate of any Malignity, let such Topicks be applied as will have a prompt effect. For this purpose touch them with *Plantane Water* sharpned with *Spirit of Vitriol*, taking care to prevent the Child from swallowing it. The Remedies must be so much sharper and stronger, as the Ulcers are deeper and more malignant; as soon as they are cauterized with this Water, let the Childs Mouth be washed with a Decoction of *Barley*, *Agrimony*, and *Honey of Roses*, or touch them with the same. As often as you shall think convenient, at least till a stop be put to
their

their spreading. Some rather chuse to cauterize these with small Tents of Rags dipt in boiling Oyl, because they apprehend if the Child should swallow them, that they could not in the least prejudice it. It will not be amiss to purge off the ill Humours in the Childs Body, by giving him a little clean Cassia or Syrup of Succory with Rhubarb. If the Ulcers are Venereal, these Remedies will have little effect.

Of the Pain and other Accidents in breeding the Teerb.

The breeding of Teeth is the cause of a great many Accidents, and often proves fatal to Children. In the time of their cutting, they are troubled with Inflammations of the Gums, Fevers, Convulsions, Loosnesses, especially when the Dog or Eye-teeth cut, and the Child is large, full of Humours and Costive.

When the Teeth cut, the Gums and Cheeks swell, there is a great Heat and Itching, which often makes Children put their Fingers into their Mouth to rub them, from whence some moisture distils down into the Mouth, because of the Pain they feel there; the Nurse in giving them suck, finds the Mouth hotter; they are very much changed and cry every Moment, and cannot sleep, or but very little; and small points of the Teeth may be seen and felt through the Gums, which appear thin and pale on the top, and red and inflamed on the sides; and if it happens to be a long time ere they cut, or that too many of them cut at a time, the Pain is so excessive, that it sometimes kills the Child.

To prevent these Accidents, the Nurse must keep a good Diet, and use all things that may allay the Heat of her Milk, for fear of putting the Child in a Fever, who already is very much in Pain; and let his Body be kept open with Clysters if he be bound.

To help the cutting of the Teeth, let the Nurse from time to time pass her Finger over the Childs Gums, gently rubbing them; and give him a stick of Liquorice to champ, or a little end of a small new Wax-candle, which is very good to soften the Gum; or a Silver Coral with small Bells to divert him from thinking on the Pain he feels. Some Women instead of a Coral, put a Wolfs Tooth in. If the Gums are hard and thick, these things do no good; some Nurses make an Incision with their Nail; but 'tis better done with a Lancet, because that is not so painful, and makes no Contusion.

If

If the Pain in cutting of the Teeth cause Convulsions, open the Gum with an Incision Knife, going so deep till you feel the Hardness of the Teeth with the Instrument; keep the Childs Body open, forbear giving him Pap, anoint his Belly with some Purgative Syrup, and the hinder part of his Neck with *Oyl of Lilies*, and let the Nurse observe a good Diet.

Of a Loosness in Children.

Children being wholly fed with Liquids, the Fibres of the Stomach are relaxed, which is apt to cause a perpetual Loosness. This often happens by reason of the great Pain which attends the cutting of the Teeth, and sometimes from the sharpness of the Milk which irritates the Guts.

A Loosness which is of no long standing, and without a Fever, is not to be accounted dangerous; but if it continue long, it will be convenient to put a stop to it, for fear the Child be too much weakned by it; for this purpose let him suck well purified Milk, giving but a little at a time, to the end he may the better digest it; give him an Infusion of *Rhubarb*, to purge away the ill Humours; gentle Anodyne Clysters may be likewise given with *Milk, Yelks of Eggs*, and *Honey of Roses*; but after Purging, let them be made with *Plantane Water*. You may likewise mix the Yelk of an Egg in the Pap he eats, rub his Belly with *Oyl of Quinces*, and lay upon his Stomach Compresses dipt in *Red VVine*, in which *Provence Roses* have been boiled.

Of Vomiting.

Vomiting in Infants is frequently the occasion of other Distempers, if it proceeds too far. It most commonly proceeds from their drawing more Milk than their small tender Stomachs can retain and digest. Sometimes the badness of the Milk, the Nurses dancing the Child too much, a violent Cough, or too great a Compression of the Stomach, are the causes of this Accident; to all which the sweetness and luke-warmness of the Milk contribute much.

VVhen the Child sucks more than it should, the Nurse must not give it so much, and but a little at a time. If the Milk be bad, let the Nurse be changed for a better; if the Vomiting be caused by a Cough, some proper Remedies must be used to appease it; if by the dancing of the Child,

the

the Nurse must forbear shaking it so rudely; if from a Compression of the Belly, care must be taken that it be not Swathed so strait. If there be any ill Humours in the Stomach, it will be convenient to purge the Child, with a gentle Infusion of *Rhubarb*, or half an Ounce of compound *Syrup of Succory*; and after this, if judg'd necessary, it may take a little *Syrup of Quinces*, and Compresses dipt in an Infusion of *Provence Roses*, *Cinnamon* and *Cloves* in *Red Wine*, may be laid on the Stomach.

Of Ruptures in Children.

The most frequent causes of this Accident are their vehement Crying, and violent Coughs; besides the Moisture and Softness of their Bodies does not a little contribute to this; in the last place too strait Swathing by forcing down the Guts, often causes Ruptures.

This Mischief must be remedied as soon as discovered, because the continual descent of the Gut, dilates the place through which it falls every day more and more. Ruptures in Children are more easily cured, than in grown Persons.

Whilst Children are in Swadling Clouts, the cure of true Ruptures which happen to them, must not be undertaken but by a Swathe-band, which is sufficient. This is effected by a Roller, putting a Compress or Truss just upon the Rupture, after having first reduced the Gut and Omentum into their Natural place. To do this, lay the Child with his Head low, then with both Hands reduce them by degrees, thrusting the Tumour with one Hand, and putting in the Gut with the other; after the Guts are reduced, lay a thick Compress on the dilated place, and Swathe it in the same manner as was directed in the Rupture of the Groin or *Bubonocoele*. Because it is very difficult for a Nurse to make this Bandage, a small Truss may be us'd in stead of it, which must be waxed to prevent being rotted by the Childs Water, and more than one must be had in readiness for change. For the better curing the Child, let him be kept in Bed forty or fifty days, and care be taken to prevent his Coughing and Crying, and his Belly must not be compressed. Some foment the place with *Smith's Water*, and then lay on *Emplastrum ad Herniam*.

The *Hydrocele* or *Hernia Humoralis*, is a Collection of Waters in the *Scrotum*. To resolve these Tumours use *Spiritus*
of

A Compleat Body

of *Wine*, or a Fomentation made of a Decoction of *Camomil*, *Melilot*, *Rue*, *Marjoram*, and *Fennel*, and apply Compresses dipt in it to the part, and after this dry the *Scrotum* with a Solution of *Alum* in *Lime-Water*, and to strenghten the part, lay Compresses dipt in a Decoction of *Roses* and *Alum* in *Red Wine*.

If these Remedies are ineffectual, make an Aperture with the Lancet to evacuate the Waters.

Of Scabs upon the Head and Face of young Children.

These are seldom Malignant, and it is a mark that they are not so, when they are only superficial, moist and yellow, and when their Crust is removed, the Skin appears of a Florid red Colour, without any notable Ulceration.

The Humours must never be repelled, because the discharge they make is useful to preserve the Body from ill Distempers, and the Child ever has its Health best when they come out. However to prevent the breeding of ill Humours, take care that the Nurse be a Sound and Healthy Woman, keep the Childs Body open, and purge it now and then with a little Syrup of *Roses* or *Succory*. The crust must be digested and brought off, to give the Matter a better issue; for which purpose you may make use of fresh Butter or Oyl of sweet *Almonds*, laying on a *Cabbage* or *Beet Leaf* after, which must be renewed twice or thrice a Day, to avoid the offensive Scent. Continue the use of these Remedies till the Child be cured, ever endeavouring to procure a plentiful discharge of Matter, after which Nature will finish the rest of the Cure. In the mean time keep the Childs Hands tyed to prevent his Scratching his Face, which would inflame it more, and bring down a Flux of Humours.

Of the Small-Pox and Meazles in Children.

The Small-Pox is a Disease in which abundance of small Pustles do break out all over the Body, which grow white, and after ripen. The Symptoms of the Small-Pox and Meazles are so very like, that it is difficult to distinguish them on the first, second, or third Day.

The Signs which precede the Eruption of the Pox are a Fever, *Stupor*, a great Beating and Pain of the Head, Lassitude, a Pain in the Back, Sickness, Vomiting, Difficulty of Breathing, Yawning, Sneezing, Itching of the Nose,

Nose, Inflammation of the Eyes, a general weariness of the whole Body, and a Urine very turbid. As for the Eruption upon the third or fourth Day, a great many small Pustles arise, which encrease in bigness and number till the eighth or ninth Day; at which time they grow white, and gradually ripen; and the Face and Head Swell, the Eyes are closed by the distention of the Eye-lids, the Nose is stoppt, the Voice grows Hoarse, there is a dry Cough, a Pain in the Throat, and a great Difficulty of Breathing; if there be abundance of Pustles, the whole Body is Swoln.

There is a sort of Small-Pox void of Malignity, this at first is attended with a Fever, which ceases immediately after the Eruption, the Pustles rise to a point, suppurate kindly, and are soon well. The Matter is white, uniform, and well digested. When the Distemper is Malignant, the Pustles are broad, flat, livid, or ill coloured, have little black spots in their middle, break out more slowly than when they are kind, and have no Digestion at all, or at least a very bad one, are filled with a Sanious Matter, attended with a Malignant Fever, *Delirium*, Difficulty of Breathing, *Syncope*, and Dysenteries; sometimes they leave behind them Malignant Ulcers, Carosity of the Bones, loss of Sight, Deformity of the Face, or Lameness of some Limb.

If the Fever be not very high, and abate in proportion to the Eruption of the Pustles, if they be not very numerous, and grow white and ripen quickly, the Distemper is not very dangerous, but if the contrary happen, it is a sign of Death. The Small Pox in Children, is not so dangerous as in grown Persons, because their Skin is more soft and Porous, so that they break out more kindly than in those who have the Skin more compact, and the Pores not so open.

The Meazles are never so dangerous as the Small Pox, because the Peccant Matter Transpires more easily and quickly. These are most commonly over in three or four Days, after which the Pox sometimes appears, which occasions the one Distemper to be mistaken for the other.

For the more successful curing this Distemper, prescribe the Child a good Diet, let him forbear all solid Meats, and feed only on Liquids; such as Veal or Chicken Broth, or a little Gelly. Let him drink a Pisan of *French Barley*, *Roots of Dogs-grass*, *Liquorice*, and *Raisins of the Sun*. Never give Pap to a Sucking Child, till it be perfectly recovered,

covered, and let the Nurse keep a cooling Diet. Do not suffer her to carry her Child into the open Air, but let her keep it close in the Chamber, neither too hot nor too cold; for too hot an Air dissipates the Spirits, and too cold an one stops the Pores, hinders Transpiration, and checks the Eruption. The Childs Sleep must be moderate, and his Belly kept open. If the Small Pox be attended with a High Fever in the beginning, together with a Difficulty of Breathing, and other like Symptoms bleeding is necessary. Purging in the beginning of the Small Pox is not to be admitted, for fear of turning the course of Humours which tend toward the Skin, but after it is proper to evacuate the remaining impurities.

From time to time give the Child all sort of Cordial and Strengthening Things, such are a pure Air, good wholesome Food, Juycce of Oranges, Syrup of Limons, and Pomgranats in the Pitsan, or a little Wine allay'd with Water, but if it be a sucking Child, Milk must serve in stead of all other Cordials.

As soon as the Pustles begin to appear, anoint them with Oyl of *sweet Almonds*, rubbing them with a Feather dipt in it. Some use *Cream, fresh Butter*, or *Stale Lard* melted and washed in *Rose-water*, and beaten up in a Marble Mortar, and with this they grease them till they are perfectly cured. When the Pustles are ripe, which may be known by their Whiteness and Itching, which usually is about the Ninth Day, the biggest of them may then be pierced (by a Gold or Silver Needle, or by cutting the tops with a pair of Scissars) to discharge the Matter, lest by its too long stay, it ulcerate and corrode the Part too deeply. Afterwards to dry them up, anoint the Face with a Liniment made of fresh *Cream*, mixed with *white Chalk*, continuing this Remedy till the Scabs be quite fallen off, using it Night and Morning, or make use of Oyntment of *Roses*, with a little powder'd *Cerufs* mixt with it.

To prevent the Small Pox from causing too great a Defluxion on the Eyes, apply cooling Remedies, as *Rose* and *Plantane Water* from the beginning; Breast Milk is very good to bath the Eyes with; Let the Nurse from time to time unstop the Childs Nose, that so he may breath with more ease. Give him sometimes a little Syrup of *Violars* to smoothen his Throat, or give him a little Syrup of *Limons* or *Pomgranats*, but Milk alone is sufficient for a Sucking Child.

How to cure the Venereal Pox in Children.

If the Mother have the Pox when the Child is born, it will infallibly be infected by her, and this may be easily discovered when it is so, by Pustles and Ulcers, in all parts of the Body, especially in the Belly, Fundament, Head, and between the Leggs.

If the Nurse who gives it Suck be Poxed, she will communicate it to the Child with her Milk. In this case the Distemper first appears in the Childs Mouth, and the sharpness of the Milk makes several Ulcers in it. But we must not presently conclude the Nurse has the Pox, because the Child has Pustles in several parts of its Body, for these sometimes proceed from the Milk being over-heated, and therefore some other Symptoms must be lookt for before you can be assur'd of it.

There is nothing farther necessary for the cure of simple Pustles, than changing the first Nurse, and giving the Child to another whose Milk is sweeter, and who will take care to keep it clean. But Children who come into the World with the Pox on them, most commonly die of it, and those who receive it from their Nurses, are very difficultly cured, their tender Age being unable to support the Fatigue of Medicines.

If the Nurse be Poxed, take the Child from her and give it to one who is Sound, who must be confined to a cooling Diet. Let the Nurse wash her Nipple with Wine every time she gives the Child Suck, and let her Purge from time to time, for fear of being infected. If no Nurse can be found who will venture to Suckle the Child for fear of being infected her self, take one who has abundance of Milk, and let her squeeze her Breast and drop it into the Childs Mouth, or let her Milk her Breast into a Porringer, and give it a Spoonful now and then, or let her put her Milk into a Funnel, at the end of which there is fasten'd a Rag rowl'd up, and put this into the Childs Mouth for him to Suck, or dip Rags in her Milk and let him suck them. But the best way is to let him suck a young Goar, fed on purpose with good Hay, and other convenient things.

Let the Child be Bled and Purged, and after if he have Strength enough, anoint him with a Mercurial Oyntment, rubbing only the Pustles and Ulcers, in doing which and reiterating the Frictions a small Flux will be rais'd by degrees,
which

which must be almost insensible, lest the Humours being stirred and carried in too great abundance to the Mouth, cause it to Swell and Ulcerate, and hinder the Childs Sucking: Wherefore but a small quantity of Mercury must be mixed with the Oyntment, and after one Friction or two, you must forbear five or six Days, and see how the Flux will rise, and then if there be occasion, give a few Grains of the Mercurial *Penacea* in the Childs Pap. Let the Nurse wash its Mouth with a Lotion of *Barley Water*, with the addition of *Honey of Roses*, or *Syrup of Wormwood* with *White-wine*, to clear it from the froth which is usually gathered about it, and that he may void the Drivel better, let him lie upon his Side, and not upon his Back, lest falling upon the Stomach, or upon the Lungs, it should choak him. Let him be always kept warm without carrying him into the Air, and watch diligently the effects of the Medicine.

The common Way to make this Mercurial Ointment, is thus; take half an Ounce of *Quick-silver*, pass it through a Leather to clear it from its adhering Filth, and then mix it in a Mortar with four Ounces of *Hogs-grease*, till it be very well incorporated; then take two Drams of this Ointment for each Friction, more or less in proportion to the Childs Strength.

How to chuse a good Nurse.

The Mother is doubtless the best Nurse that a Child can have, if there be no reason to the contrary. The best Age for a Nurse, is from 25 Years to 35, because about that time a Woman is stronger and more healthy than at any other. The common Opinion is, that a Woman is most fit to be a Nurse, two or three Months after her Delivery, because at that time the Milk is purified, and her Body purged by her Cleansings, but she cannot be so much longer, because in this case the Milk would not continue so long, as would be necessary to suckle the Child. She must not have Miscarried, but had her Child at due time. The Milk of a Woman who has been Delivered of a Male Child, is commonly thought to be best, and it is to be preferred if it be her Second Child, because she may then very well be supposed to have some Experience in the Ordering and Managing her Infant. *Mauricean* prefers Milk of a Fortnight old, to that of three or four Months, and if it be for a Girl, he prefers a Nurse who has a Girl, to one who has had a Boy.

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She must be Sound and Healthy, and born of Parents who were so, and never had the Stone, Gout, Kings-Evil, Falling-Sickness, or any other Hereditary Distemper. She ought to have a clear Skin free from all Scabs, Itch or Scald; she ought to be strong and able to watch and tend the Child as occasion requires. It is convenient she be of a middle Stature, neither too large nor too little, too lean or too fat; but above all, she must not be with Child. Let her Complexion be Sanguine, and her Flesh plump and firm. She must not have her Courses, for that is a sign her Blood is too hot, or she is too amorous; she must not have the Whites, for these are a sign of a bad Habit, she must not be red Haired, or mark with any Spots, but her Hair must be black or of a Chestnut brown. She must be well shaped, neat in her Clothes, and handsome in her Face, having a Sprightly Eye, and Smiling Countenance; she must have good Eyes, Sound and White Teeth, and ought to have a sweet Voice, to sing to and please the Child. She must have no ill Scent come from her, as usually red Haired Women have, and not those who have black Hair and a white Skin, for their Milk is Hot, Sharp, and of an ill Taste and Scent; she must not have a strong Breath, as they who have a stinking Nose, and bad Teeth, because she would infect the Childs Lungs by often drawing in the corrupted Air.

Her Breasts ought to be pretty large to contain a sufficient quantity of Milk; they ought to be pretty firm and plump, and not flabby or hanging down; for a large strutting Breast is the Mark of a good Habit of Body. As for the Nipples they must be well shaped, not too big nor hard, nor callous, nor sunk in, but they must be raised, and have several small Holes that the Child may suck without any great pains; she must have Milk sufficient, and not in too great excess, because the Child not being able to draw it, it grows stale in the Breast, and by its long stay there, turns sour and curdles; and therefore she may let another Child suck the remainder. Her Milk must not be too thick nor too watery, which may be known by Milking it into the Hand, and the turning it a little on one side; for if it run off immediately, it is a sign it is too Fluid, but if it do not run off at all, it is too thick; the good is of a consistence between both, which runs off gently in proportion to the inclining of the Hand, and leaves a Trace behind it. The whitest Milk is the best, and the farther any

recedes from that the worse it is, it ought to have a pleasant smell, and ought to be well tasted, that is, sweet and sugar'd without any Acrimony or Heat. But we must not forget one principal condition of a good Nurse, and that is, that she be an Honest and Conscientious Woman, because these qualities will make her sober and careful of her charge, and preserve her from Drinking and Venery.

How to prevent Childrens growing Squint-eyed, Awry, Crooked or Lame.

To prevent a Childs becoming Squint-eyed, chuse a Nurse whose Sight is firm and straight, lest by her ill example, he get a bad Habit, Children being wondrous apt to imitate what they see done. Let his Cradle be ever so placed, that he may always have the light before him, because when it is on one side, the Muscles of the Eye are apt to act independently on one another. To redress this inconvenience, let the Child wear a Mask upon its Face with two small Holes right against the Eyes to see through, which will cause him perceiving no light but through them to direct his Eyes that way, and by degrees quit the ill Habit he has got of looking aside.

To prevent the Childs growing crooked, awry or lame, the Nurse must swaddle his Body strait, equally extending his Arms and Legs, and Swathing his Body sometimes one way, sometimes another, lest if she should swaddle it always alike, the parts should retain an ill Figure. The Nurse must lay him on his Back streight, and not bending, and when she holds him in her Arms, let her carry him sometimes upon one, and sometimes upon another, for holding his Legs always in the same Fashion, it would be a great Hazard if they did not grow crooked, and this compression especially about the Knees, is the cause why so many Children have crooked Legs.

When any Parts have contracted an ill Figure from whatever cause it proceed, let this be remedied with Swathes and Compresses conveniently placed, to keep the Part in a good Posture, whilst the Child is in his Clouts. When he is grown a little bigger, small Leather Boots may be used to straighten the Legs; if the Foot only be awry, Shoes underlaid of one side higher than the other, will serve the turn. When the Breast or Back-bone are in fault, it must be helped if possible, or at least hinder from growing worse,
by

by a little Bodice of strong Whale-bone very well lined on that side where it jets out. A Cross made of Steel is now in use, the Traverse of which passes over both Shoulders, and the perpendicular lengthways of the Body, this Instrument is very convenient, and do's not appear.

Those who would seriously apply themselves to the Practice of Deliveries ought to have that excellent Piece of the famous M. *Mauriceau* on this Subject ever before them, and read it Day and Night. I dare engage the intelligent Reader will perpetually find new matter in it. This is a Noble, Useful and Lasting Monument, from which Posterity will reap great Advantages.

REMARKS.

Mauriceau assures us, he delivered a Woman of a Dead Child, which she had retained in her Womb fortwo Months, after being severely exercised with a violent Cough. Tho' the Child was entirely stript of its Scart-skin; yet it had not the least ill Scent, being kept in this manner from all manner of Cadaverous Putrefaction. The Mother retained it to the end of the ninth Month, without any notable inconvenience (and continued in perfect good Health till after her Delivery.

The same Author relates, *Obs.* 465. that on the 21st of November, 1686. He laid a Woman nine Months gone with Child of a Girl perfectly Sound, her Burthen appeared to be Sound, though the Mother had in the Neck of the Womb several Miliary Pustles and Yellow Excrescences, which undoubtedly proceeded from a Virulent *Gonorrhœa*, which her Husband probably had given her above a year before.

Obs. 422. He relates that on the 25th of January, 1686. He happily delivered a Woman of a Male Child, the Child was seized with a great Defluxion on the Head, caused by a great quantity of cold Water which the Priests poured on the Mould in Baptizing him. This cold Water created so great an Obstruction, that it could not breath through the Nose, and therefore was incapable of Sucking, and obliged to quit the Breast, as soon as it had taken it into its Mouth, and this killed the Child in four days after.

Obs. 692. He tells us a Woman Miscarried of a *Fetus* wholly emaciated, which was about the length of a Mans Finger, being about three Months gone, and this was occasioned by a great clap of Thunder which surprized her.

Obs. 688. This Author mentions a Woman who was delivered at Nine Months end of a Girl very sound and well, though the Mother voided near a Quart of Water in one Day, above two Months before, and after voided a considerable quantity more at different times. He makes a question whether these Waters were the effect of a Dropsie, or were really the Childs Waters, and concludes they could not be any other than a Dropsie, because the Child had been incapable of sustaining such a loss, and the Woman must of necessity have been delivered when the first Waters came away.

Obs. 489. He tells us he had laid a Woman of 35 years of Age, whose Hymen was entire, and only perforated with a small Hole, she was with Child though her Husband could never break that Membrane, and enter her Body, as she her self assured him. This Example makes it evident, that a Woman may become big with Child without introducing the Yard, and that it is sufficient that the Seed be lodged within the Neck of the Womb.

Obs. 393. He remarks, that a Woman of sixteen years of Age and a half was got with Child tho' she never had had her Courses.

Obs. 20. He tells us that a Woman having had a continual Oppression in the time of her going with Child, was bled four or five times in the Arm, twice in the Foot, once in the Throat, notwithstanding which she was delivered of a Healthy Child at her due time.

Obs. 30. He tells us that a Woman of Eighteen years of Age, was happily delivered at her due time of her first Child who was very well, as the Mother her self was, though she had been bled Ninety times during her going with Child, particularly in her eighth Month 22 times in the Arm, and twice in the Foot.

Obs. 23. He tells us that a Woman of 22 years of Age, and seven Months gone with Child, underwent a Salivation for the cure of a Pox; the Flux was so copious, that she filled five or six Basons every Day. This Woman was cured of her Distemper, and at last happily delivered at her due Term of a Healthy, Sound Child, which perhaps would have died of the Pox, if the Woman had not gone through this Course.

Obs. 40. He relates that a Woman having a *Prolapsus* of the Womb made use of a Pessary, who was notwithstanding got with Child, though she did never take that Pessary out.

Obs.

Obf. 70. He tells us that a Woman who had been Hydro-pical for the space of nine Years, was notwithstanding pregnant, and when her time was up, delivered of a lusty Child; the Dropsie encreased till the time of her Delivery, and she had four Children whilst her Distemper was on her, amongst which was a Girl who appeared to be seven years of Age, when she was really not above four and a half. After her Delivery, her Belly did not sink more than if a Pullets Egg had been excluded, and she appeared as big as if she had near 30 quarts of Water in her Belly.

Obf. 249. He relates that a Woman whose Belly was two Ells of *Paris* measure in Circumference, was notwithstanding got-with Child, and delivered several times when her time was up. This Woman in good Health weighed 110 lb. and when she had her Dropsie, 220. and yet had her Courses very regularly. This Woman made Issues in her Legs, whereby all the Water of her Body being evacuated, she dyed within a few days after.

Obf. 105. He relates that a little Woman who had had several Children, when she was not with Child, would often emit wind with as great a Noise as from the *Anus*, adding, that he had seen several Women, who tho' with Child, have been subject to the same Accidents.

Obf. 146. He tells us that a Woman at the end of her eighth Month, was delivered of three Children, each of which had a separate Burthen, tho' the Woman was Paralytick on one side of her Body.

In *Obf. 174.* He relates that a Woman having the *Nymphæ* excessively long, which was displeasing to her Husband, and incommoded her very much in Riding, by rubbing against each other, she cut them off and lost twelve Porringers of Blood in five or six hours.

In *Obf. 223.* He mentions a Woman who seeing her Husband return from the Army with his Head bound up, was deprived of her Senses by the sudden Fright, fell into a Flooding, and was delivered of a false Conception.

Obf. 245. A Woman about six Months gone with Child being overturned in her Coach, and exceedingly affrighted by the Accident, the Child in her Womb died; and continued there for the space of a Month, notwithstanding which it was not much corrupted, being preserved by the Waters; for if these had come away, it must of necessity have putrefied.

Obs. 246. He tells us he had seen an Abortive *Fœtus* of five weeks old, which though no longer than his Nail, had all its parts as perfectly formed, as one of nine Months.

Obs. 251. He relates, that a young Woman dying after she had been two days in Labour, not being able to be delivered, the Child which was very large presenting its Head and one side of his Face, was opened after her Death, and the Child was found dead; and though its Head was in the Passage, by its struggling it had broke through the Womb, and thrust the Burthen into the cavity of the Lower Belly.

Obs. 301. He mentions a Surgeon who cutting the *Frænum* in a Child that was Tongue-tyed, opened a Vein which poured out a great quantity of Blood, and this coagulating in the Stomach killed the Infant.

Obs. 345. He assures us he had seen a Woman eight Months and a half gone with Child, who having had a very dangerous Pleurisie about two Months before, was seized with a continual Fever and *Delirium*, of which she dyed after ten days Illness. As soon as she was Dead, an Incision was made into the Womb, and a Child taken out which lived about two Hours.

Obs. 342. He mentions a Woman who entirely lost her Senses upon hearing of the Death of her Child, about five or six days after her Delivery, who notwithstanding became pregnant, and after was happily delivered of another Child, and restored to the use of her Reason.

Obs. 383. He mentions a Woman of twenty years of Age, who being supposed by the bigness of her Belly to be with Child the first time, and about six Months gone, had violent Vomitings, which after some time were staid by the bringing up a Worm as long as a Mans Hand; after this she fell into a Hectick Fever and continual Loosness, with which being very much wasted she died. Upon opening the Body the left Testicle was bigger than a Mans Head, and filled the whole capacity of the lower Belly, weighing fifteen pound, and was of a very compact Substance, the right Testicle was as big as both a Mans Fists, containing in the midst of it a Glairy Matter, resembling the White of an Egg. The Womb it self was no bigger than that of a Child of eight years old.

Bartboline and *Forestus* assure us, that a Woman with Child having the Small Pox, was after delivered of a Child who

who had Scars, from whence it is evident that the Mother and the Child had the Distemper both at the same time.

Amatus Lusitanus, Centur. 5. tells us that a Woman with Child having taken an Infusion of *Saffron*, was after delivered of two Girls, whose whole Bodies were tinged yellow. This Accident gave occasion to some *Virtuosi*, to make the Experiment in a Bitch whose Whelps became all yellow.

In the *Miscellanea Curiosa*, Obs. 42. there is a Relation of a Woman in Hungary who being in Labour, and the Fetus having his Head out, drew it back into the Womb, where it continued a Fortnight longer, and after was born without any ill Accident.

Mr. Boyle in his Experimental Philosophy, relates that a Child was heard to cry in his Mothers Belly.

In the *Scholion* to the 62 Obs. of the *Miscell. Curiosa*, we are told that in the Year 1624. a Woman nine Months gone with Child, heard her Child sigh in her Belly whilst she was at Church in the Town of *Colberg*, several Women besides heard it. After this Child was born, its Mother and it self were both poisoned by a certain Person, her Husband died of the Plague, the House in which she lived was fired, and a great part of the Family burnt, and others lost their Limbs, and not long after a terrible War broke out in that Country, all which Mischiefs the People did believe, this Childs sighing did Presage.

Pliny in the third Book of his *Natural History*, Chap. 3. relates that a Child being half born, retired back into his Mothers Womb. This Prodigy hapned the same year that *Hannibal* destroyed the City of *Saguntum*.

C H A P. XXV.

Of the Cæsarean Birth.

THIS Operation is an Incision into the Belly and Womb, to take out the Fœtus.

THE CAUSE of this Operation is the largeness of the Fœtus, which cannot pass by the Natural and Ordinary Way, or perhaps its breaking through the Womb, and so falling into the Belly, or the Womb insinuating it self through the Rings of the Abdominal Muscles.

THE SIGNS. The largeness of a Child is easily known, by the Mothers Belly being excessively swelled. This may be farther evinced if putting your Hand up into the Womb, you find there is an *Hydrocephalus*. You may conclude the Womb has thrust it self through the Rings of the Muscles, if it be not in its proper place; and you may believe the Child has forced its way into the Cavity of the Belly, if there be nothing in the Womb, and you have certain indications of the Womans being with Child.

The OPERATION.

Place the Woman on her Back, and then make a Longitudinal Incision below the Navel, the Body of the Womb, and put the *Linea Alba*, and cut through the Teguments till you lay the Womb bare; be sure to make the Incision large enough to extract the Fœtus, and when this is done make an Incision through the Body, and on one side the Womb put the forefinger of the left Hand into the Incision to widen it, and guide the Point of the Scissars or Knife on the Finger, to prevent hurting the Child; then open the Membranes which contain the Fœtus, and bring both it and the Burthen away, after having dextrously disengaged it. Wipe the Blood off the Wound with a Sponge dipt in Wine warmed, and make a Suture of the Belly, as in its proper place was directed, without stitching the Womb at all.

THE DRESSING is the same as in the *Gastroraphia*. Put a Pessary into the *Vagina*, for the more easie evacuating the Blood and Cleanings, and making Injections into the Womb.

THE

THE CURE. Dress the Wound once a Day with some good Balsam till it be cicatrized, and let the Motion of the Belly be checked with such Instruments, as were described in the Operation of stitching the Belly.

R E M A R K S.

In the *Journal des Cuvans*, there is a Relation of a Woman of *Chateau Thierry*, who some years before being ready to lie in, called in the Surgeon of the Place, who seeing her case very bad, undertook to make the *Cæsarean Section*. The Mother was six Months under Cure, and the Child lived 13 Months. The Woman sometime after her Cure had a *Hernia Ventralis*, which encreased to a great size, she supported this Rupture with a Bandage hanging from her Shoulders, but the Pain encreasing with the Swelling, and this at last Ulcerating, forced her to seek for a Cure in the *Hôtel Dieu*, where she remained three Months, in which time the Rupture rose so high, that it suffocated her. Mr. *Saviard* who was then Surgeon in that Hospital opened the Body, found the *Peritoneum* connected to the *Omentum* and small Guts by several Membranous ties, and the *Ileum* and *Fejunum* contained in the Swelling. He found a *Cicatrix* in the Womb within and without, with some Membranous Skirts on the *Cicatrix* within.

Sennertus relates, that a Woman bending a Stick for the Hooping of a Tub, one end sprung back, and hitting her a blow on the Groin, broke the Muscle of the *Peritoneum*, by which means the Womb insinuated it self into the Groin in such manner, that it could not be reduced into its Natural Place. The Woman became Pregnant, and the Womb with the *Fœtus* in it hung between her Thighs, and there was no possible way to deliver her without making an Incision. When the Operation was over, the Womb could not be reduced into its Natural place, but the Skin was brought over so as to cover it, and so it was stitched. The Womb lessened by degrees till it came to its Natural size, but the Woman after some time hapning to do some work, the Wound gangrened and killed her.

C H A P. XXVI.

Of a Polypus.

THIS Operation is the *Extraction of a Carnous excrescence in the Nose.*

THE CAUSE. A *Polypus* is a carnous excrescence formed in the cavity of the Nose. For the better understanding the cause whence this proceeds, we must consider that the internal Membrane of the Nose is very thick, spongy, and abounds with a Viscid, Glutinous Humour, and that its Pores are so disposed, as to admit the gross and terrestrial parts of the Blood to pass, and from the comparing these Causes, it will not be difficult to conceive the manner how these Excrescences grow. For by the encreasing Heat of the Blood, and the Rapidity of its Motion, the less viscid parts exhale, and the rest is condensed into a hard Substance, and when this is once formed being detained in the Membrane, it extends the Vessels, tumefies the Glands, and by the accession of new Matter, a Fungous Carcinomatous Mass is engendred.

The *Polypus* sometimes proceeds from an acrid *Lympha*, which corrodes the Glands and the *Tubuli* of the internal Membrane of the Nose, and the Nutricious Juyce emptying it self there, is coagulated round the Orifice, and this concentered Lump is called a *Polypus*, though sometimes it is only a Mass of tumefied Glands which cohere together. The great Agent in this, is the Acidity of the Humours which is the general cause of all Corrosion and Coagulation in Animal Bodies.

THE SIGNS of a *Polypus* are manifest, viz. a Carnous Excrescence, which sometimes comes out of the Nose, and at other times hangs down the Throat, hindring Respiration, and sometimes occasioning great Fluxes of Blood.

Some *Polypus's* are Schirrous, others Painful, and apt to degenerate into Cancerous Ulcers; which last are most commonly the effect of some Venereal Distempers too long neglected; some are soft and of a White or Red Colour. These latter most commonly do not adhere so firmly, and by consequence are cured with less difficulty.

All Tumours in the Nose must not presently be pronounced to be *Polypus's*, for sometimes they are only attendants of an *Ozena*, which is an inveterate, sordid, stinking Ulcer of the Nose, which emits an acrimonious ill coloured Matter, and causes great Pain by its excessive sharpness, corroding the internal Membrane like an *Aqua-fortis*. This Ulcer is covered with a large, moist Crust, from which a thick foetid Matter distils and makes the Breath stink, infecting those who come near it.

This Ulcer, like all others, proceed from an Acrimony of the Humours by which it corrodes the Membrane of the Nose.

If a *Polypus* be not treated Skilfully, it degenerates very often into a *Cancer*.

There are some *Polypus's* which fill the Nostrils, and when this happens, the Nose becomes hard and Schirrous, and the Patient cannot breath through the Mouth without blowing.

If both Nostrils be stoppt, the Disease is incurable. If the Excrecence be hard, of a livid colour, painful, or adhere to the Bony *Lamellæ* of the Nose, or be Cancerous, all tampering with it, in stead of appeasing, will exasperate it. But if it be of a Fleishy Substance, Whitish or Red Colour, and void of Pain, it may suffer the Operation.

THE OPERATION.

This is done with a *Forceps*, which is to be introduced into the Nose, and so taking hold of the *Polypus*, and turning the Instrument one way and another, you may pull it out by the Roots.

If the Excrecence be so large as to hang out of the Nose into the Mouth, you must extract it with the *Forceps* through the Mouth. This is the way that a *Polypus* ought to be extracted, as often as it can be practised, because by this means it is most easily eradicated.

The Ancients consumed *Polypus's* quite to the Roots, with Potential or Actual Cauteries conveyed into the Nose by a *Cannula*; but these ways are grown obsolete, though they may have their use when the *Polypus* has a large Basis, and adheres firmly, for in this case it would be impossible to bring it away with the *Forceps*.

THE DRESSING. If a Hæmorrhage ensue, stop it with

a Tent arm'd with astringent Powders, or Syringe the Nose with some Styptick Water.

THE CURE. If the least Roots of the *Polypus* remain, a new one will infallibly arise, and therefore Suppuration must be encouraged to consume them, and *Savin* or some other powders us'd if that be not sufficient. But observe here not to apply Causticks without necessity to the *Septum* of the Nostriis, and to lay some Tent on to defend those parts, which you would have remain untoucht.

Since *Polypus*'s most commonly arise from the sharpness of the Blood, it is evident a good Diet must be kept to sweeten it. To this end, let the Patient abstain from all Acid, Salt, or Pepper'd Meats; let him drink a Ptisan made of Barley, and other Vulnerary Ingredients; give him Alkali's and Sudorificks, as Powder of *Vipers*, from ℥i. to ʒss. *Diaphoretick Antimony* to the same quantity, Blood of a Stag, from ℥ss. upwards, which may be taken separately, or more of them together, to the quantity of ʒss. or ℥ij. in a Glass of *Carduus Water*. *Millepedes* dried in an Oven and powder'd, are a very good Alkali, and may be given in a Ptisan. Apozems of *Guajacum*, *Salsa Parilla* and *China* are good Sudorificks, but when the Patient takes any of these Medicines, he must keep his Bed and Sweat. These Remedies must be frequently repeated for the more effectual sweetning of the Blood.

Of Ulcers in the Nose.

Though these are not *Polypus*'s, yet it seems very proper to refer them to this place. These Ulcers are very difficultly cured, all Mercurial Medicines are good in these cases, which may be taken from 15 to 30 or 40 grains in *Conserve of Roses*, and must be continued from a long time; Sudorificks likewise are good. In short these Ulcers must be treated in the same manner as Venereal ones.

If these Ulcers are Scorbutick, you may make use of the following Liniment. ℞. Crabs Eyes, *Sperma Ceti*, ā ℥ss. *Cinnabar*, gr. 6. Sugar of Lead, gr. i. *Camphire*, gr. iiij. mix these with a sufficient quantity of *Balsam of Peru*. Or you may use the following Injection if you please, ℞. Hydromel ℥i. Juice of *St. Johns-wort*, *Wormwood*, *Smalage*, Spirit of *Feverfew*, ā. ʒi. Myrrh and *Camphire*, ā. ℥i. If the Bone of the Nose be carious, apply the actual Caustery.

Fumi-

Fumigations of *Frankincense*, *Amber* and the Gums are useful in these cases.

REMARKS.

Riverius in his communicated Observations, *Obs.* 24. tells us, he had cured a *Polypus* in this manner : In the first place he prescribed an exact Regimen, and purged the Patient, and after that he made use of the following Liniment ; *Rx.* *Pomgranat* peels, *Galls*, *ā.* *ʒiſſ.* *Savin* Tops *ʒij.* burnt *Chalcitis* *ʒiſſ.* Burnt *Alum* *Div.* mix these with *Egyptiacum*, and apply the Mixture to the Tumour. During the time of Cure, he frequently rubb'd the Neighbouring parts with an Unguent made of *Bole* and *Litharge*, with the Addition of *Amber*.

Sometimes large Worms have been voided by Ulcers of the Nose. *Kerkyringius* in his Observations relates, that a Woman had for a long time been troubled with a Difficulty of Breathing, a Violent Cough and Pain in her Head, but at last in blowing her Nose, she voided a long Worm with a multitude of Feet, a forked Tail, and Horns on its Head, it was very lively, and stirred much about. The same Woman voided another of a greenish Colour, and a like Figure. He adds, he kept this Worm for a considerable time, and that it generated another little one it self.

CH A P. XXVII.

Of Amputation.

THIS Operation is the *Extirpation* of a Member, when there is some *Gangrene*, *Mortification* or *Fracture*, and the Bone is very much shatter'd.

THE CAUSE. The difference between a *Gangrene* and *Sphacelus*, or *Mortification*, is that one is incipient only, and the other is complet.

These Accidents arise from a defect in the due distribution of the Blood and Spirits to the Part. Inflammations of a part ill treated, and the Application of Emplasters hinder Transpiration, and by consequence the Blood Stagnating

ting corrupts, and the part Mortifies, which at first is only a Gangrene, but after becomes a *Sphacelus*.

When there is an interruption in the Motion of the Heart, the Blood do's not duely circulate, and the Spirits not being distributed to the Extreme parts, they become chill, the Face grows pale or livid, and the Limbs lose their Sense and Motion. On the contrary, as soon as the Heart recovers its Motion, the Blood freely circulates through the Parts, and they are restored to their Sense, Motion, and Natural Colour. From all which it is most evident, that the Life of an Animal consists in the free Circulation of the Blood through every part, and the Mortification occasioned by excessive Cold, or strict Ligature in Fractures of the Bones, which stop its Motion are demonstrative proofs which confirm this Assertion.

Gangrenes sometimes proceed from Obstructions of the Nerves, because for want of a free supply of Spirits, the Parts lose their Sense and Motion, and by consequence the Influx of the Blood ceases; this is clear in Paralytick Persons, in whom the parts affected ever gangrene first. From which I infer, that the causes of Gangrenes are a deficiency of Blood and Spirits, arising from some coagulation of this Vital Liquor, or other impediment in its Circulation.

This is illustrated by comparing the Blood with any Vinous Liquor. For all Wines whilst they retain their Spirits continue to be potable, and preserve an easie and gentle Fermentation; but when once the Spirits are exhaled, and the acid parts prevail over the rest, they lose their sweet and pleasant Taft, become eager and sour, and sometimes only a dead insipid Phlegm. How much the Spirituous parts conduce to the good Temper of the Mass, is evident in the distillation of Wine; for when the Spirituous Parts are drawn off, the remainder is a mere nauseous and useles Phlegm. It happens just after the same manner in the Blood of Animals; for when the Spirituous Parts are lost, the rest becomes a heavy unactive Mass, bereaved of that principle which should preserve a gentle Fermentation in it.

When any part suffers by intense Cold, especially the Extremities, the Circulation is intercepted, by reason of the constriction of the small Vessels, and when the quantity of the Blood imported is so very small, the parts must needs suffer

suffer a Diminution of their Sense and Motion, and by consequence gangrene.

Men who die of excessive Age, are most commonly seized with a Gangrene, because their Blood loses all its Spirits, which are the true *Humidum Radicale*; and for the same reason Mortifications happen after Excessive Labour, Loosnesses of a long continuance, or long Fasting, in short, whatever waists the Spirits.

Gangrenes often seize the Feet and *Scrotum* of Hydropical Persons, because their Blood is serous and wants Spirits, and there is less Heat in the extreme Parts, besides the Serosities compressing the Channels which Nature has formed for the conveying of the Blood to all parts of the Body, must necessarily intercept its Motion.

The aptness of parts which suffer by extreme cold to gangrene, proceeds as well from a concentration of the Spirits, as an obstruction in the Motion of the Blood, which is plain by the instance of a Bottle of Wine, which if it be exposed to the Air in a vehement Frost, the watry and more gross unactive parts will be frozen all round, and the more Spirituous and Fine ones remain liquid in the Center; nor can it be imagined but excessive Cold must have a like effect on Animal Bodies.

The Back and Buttocks of Persons who are forced to keep their Beds for a long time often gangrene, and this arises from a Compression of the Vessels which not conveying Blood enough, and by consequence the Part wanting a due supply to animate it, must necessarily grow cold and mortifie.

Great Inflammations, Contusions and Aneurisms, (especially if there be Blood spilt in the interstices of the Fibres) very often terminate in a Gangrene, and this is not difficult to account for, because the Extravasated Blood putrefying, must necessarily compress the small Channels, and intercept the Motion of the rest, and it is evident that this is so, because the Pulsation ceases in proportion as the Gangrene encreases, and the part losing its Natural Colour, becomes pale or livid.

When Oleous, Greasy, or Astringent Medicines are applied to Inflammations or *Erysipelas's*, they most commonly gangrene, because they Oily parts stop the Pores and hinder Transpiration, and there being a continual congestion of Matter in the part which cannot be discharged, it must necessarily compress the Vessels, and hinder the influx of the
Blood

Blood and Spirits. The Mischief of Astringent Medicines, proceeds from the same reason, and in the Hot Countries where the Pores are more open, Gangrenes do not so frequently happen after Inflammations, as in colder Climates.

Gangrenes after an Inflammation, are more apt to seize on soft and spongy parts, as the Gums, Lips, Genitals or Brain, than on the solid, which do not imbibe so great a quantity of Humours.

Gangrenes sometimes ensue on Ulcers, Wounds, Scorbutick Spots, or sharp or corrosive Medicines, because these being attended with Pain, an Inflammation of necessity must follow.

Carbuncles most commonly Mortifie, because they proceed from excessive sharp Humours, which like an *Aqua-fortis*, corrode the Vessels and the Parts. In the last place, when the Humours of the Body grow sharp and corrosive, they frequently leave a Mortification behind them, as we see happen in Malignant Fevers, in the Small Pox, and many other Distempers where the Humours are very much corrupted.

THE SIGNS. In Gangrenes which seize superannuated Persons, arising from a deficiency of Spirits, there is no sensible Heat or Inflammation, the Part withers, loses its Sense and Motion, and the Person dies gradually.

When a Gangrene follows on a Dropsie, the Pain at first is very slight; but afterwards the Legs are inflamed, and it encreases. When a Gangrene proceeds from external Cold, the Pain is very acute; at first the Part becomes red, livid, and afterwards black, the Spirits abandon it, and a Mortification ensues with a shivering Fit, not unlike that intermitting Fever. If the Gangrene proceed from Compression, Ligature, Tumours or Luxations, or Fractures, or long lying on the Back, there is a Stupor, and a perfect privation of Sense and Motion.

If a Gangrene follows an Inflammation, the Pain and Pulsation cease, the Part becomes of a pale red, or violet colour; there are a great many *Vesiculae* or small Blebs arise on the Surface of the Skin, which are filled with a Salt Muddy Water, the Natural Heat is extinguished, and the Part becomes soft and flabby, and retains the impression of the Finger. If the Mortification be perfected, the Patient falls into a great *Languor*, attended with a Burning and Malignant Fever, Vomiting, and other Symptoms which plainly discover Death is not far off. These Accidents happen

happen upon the applying, Repelling and Emplastick Medicines.

When a Gangrene happens upon the use of an Actual Cautery, or other Caustick Medicines the Part is benumbed, and loses its Sense and Motion. When it proceeds from any Malignant Matter, as in the Bites of Venemous Creatures, there is a Mortification of the part, a Fever, Vomiting, *Delirium* and *Syncope*.

The Signs of a *Sphacelus* or perfect Mortification, are a heaviness in the Part, Blackness, Stench, the Flesh is flabby, has no Sense, the Skin separates from it, and it grows dry. Sometimes a part which is perfectly Mortified, does not presently lose its Motion, which proceeds not so much from it self, as the Muscles which move it being fixed to a sound part. There are some Pustules which arise on the Skin, because when the Blood Stagnates in the part, there comes a sharp corrosive *Serum* from it, which insinuating it self under the Skin, separates it, raises it, and forms these small Eruptions. There is no Pulsation in the Part, and it becomes pale and livid, because the Circulation of the Blood in the Part ceases, and being extravasated, it putrefies. The Pains proceed from the irritation of the Membranes and Nervous Fibres by the corrosive *Serum*, and they cease when the load of extravasated Matter presses on the Nerves, and intercepts the Motion of the Spirits through their proper Channels. The great quantity of Serosities which moisten the Fibres, make the Part soft and flabby; add to this, that upon a Cessation of the Influx of the Blood and Spirits, the Parts must necessarily be relaxed.

The Acids which corrode and destroy the Neighbouring parts, assist the Mortification in its progress. If an Ulcer mortifie (besides the forementioned Signs) it emits no Matter, or at least what it do's is ill colour'd, and has a Stench.

A *Sphacelus* is incurable, except by an Incision of the Mortified part. A Gangrene or Mortification arising from an internal Cause is curable, because though you should extirpate the part, the Gangrene would be reproduced in another. Flethy parts replete with Blood are more easily restor'd than any others, on the contrary Nervous parts are more apt to Gangrene, and cured with more difficulty.

A Gangrene proceeding from an external cause, must be cured with all speed, and prevented from spreading it self. That which seizes Superannuated Men and Hydropical Per-

sons is incurable, and the Amputation of the Member would be altogether uselefs.

A Gangrene in the soft internal Parts, is very apt to Sphacelate.

Gangrenes are much sooner cured in young than in old Persons, and in Robust, than in weak Men, those which proceed from intense Cold, and seize the extreme parts only are curable, provided the part be not Mortified.

Gangrenes occasioned by great Inflammations, Tumours, Fractures, Luxations, Contusions, Aneurisms, *Erysipelas's*, Ulcers, Burns, Scorbutick Spots, Bites of Venomous Animals, Application of Unctuous Medicines, Causticks, Actual Cauteries or Compression may be cured in the beginning.

The Operation must not be undertaken on slight occasions, and a Surgeon must consider well whether there be a probability of Success; for instance, if the Mortification be on the upper part of the Thigh, it would not be advisable to meddle with it at all, because it is too near the large Vessels, and Parts necessary to Life. It would not be proper to perform it when there is a High Fever, with Vomiting and a *Syncope*, because these are Mortal Symptoms, but it may be practised in Cariofities and *Fistula's* of long standing in the Joynts, or when the Bone is entirely broke, and the Splinters run into the Flesh and Tendons, and prick some Nerves or Blood-Vessels, and cannot easily be reduced to their Natural place; but if they can be reduced, and the Inflammation be not very considerable, forbear Amputation.

Complicate Wounds are difficultly cured, and especially in ill Subjects, and there is great reason to fear Pain and Inflammation, which are often attended with bad consequences.

When Cariofities and *Fistula's* arise from any Hurt, Contusions, or crushing of the Parts, whilst they are recent, do not affect the Joynts, and the Humour which produces them is void of all Malignity; you must try to cure them by Medicines, and not proceed to an Amputation of the Part presently.

But if the Distemper proceed from some Scrophulous Humour, or some Abscess or Ulcer which is the *Crisis* of the Fever, or an Universal Corruption of the Blood, or if they are of long standing in the Joynt, or the Cariofity, Pain and Inflammation

Inflammation are very considerable, and the part disabled from performing its Natural Functions, it must be extirpated, if the Patient has strength enough to undergo the Operation. But before you proceed to it, let the Blood be prepared and sweetned by general Remedies, Sudorificks and Cordials.

THE OPERATION.

A Limb must never be cut off in the Joint, without a Visible necessity for it.

The Leg must be cut off as near the Knee as is possible, though the Mortification spread no farther than the Foot, for the more commodious carrying a Wooden Leg. The most proper place for this purpose, is about four fingers breadth below the Joynt, precisely beneath the Termination of the Tendons which cover the *Rotula*. On the contrary cut as little as may be off the Arm, because it serves as an Ornament and Counterpoise to the Body, and an Artificial Hand may be made to be useful in some cases. Cut off as little of the Thigh as is possible, that the Digestion of the Wound may be made in a shorter time, and the Patient have strength enough to undergo the Cure.

To cut off the Leg, let the Patient sit in a Chair or on the side of his Bed, and let one Servant hold him behind, and another stand before to hold his Leg, then draw the Skin below the Knees up, that so it may the more easily cover the Bone after the Operation is over. Then make two Ligatures, one above the Knee, which you must straiten with the Turnstick or *Tourniquet*, and the other above it. The first Ligature serves to compress the Vessels, stop the Flux of Blood, and take off the Sense of the Part. These Ligatures must be made on a thick Compress laid along the Ham, and before you straiten the Ligature above the Knee with the Stick, you must lay a small Past-board under it, to hinder it from pinching the Skin, and being painful to the Patient. This way is very useful to command the Blood, and let out as little or much of it as you judge convenient after the Amputation. The Ligature below the Knee serves to keep the Flesh steddly, and ought to be placed at least four fingers breadth below the Joynt.

When the Knee is steddly, let the Surgeon place himself between the Patients Leggs, and with a crooked Knife make an Incision around quite to the Bone, and to do it better,

let him make it with his right Hand, resting his Left on the Back of the Knife, which for this reason must not have an edge there; let him scrape off the *Periofteum* with a slender straight Knife, and cut the Flesh between the Bones with it, lest if he tear them with the Saw, he cause some farther Accidents.

Before you saw the Bone, take a Filler and slit it lengthways to the middle, then put the two ends on the Flesh which is cut, and draw it up to make way for the Saw, and then saw the Bone as near the Flesh as possibly you can, for this shrinking and wasting in the Digestion, without this way of prevention would remain uncovered, and create the Patient abundance of Trouble.

Let the Surgeon take the Leg in his left Hand, and the Saw in his Right, and fix it at once on both Bones, and then begin with the lesser Focil, and end with the greater; for if he should begin with the *Tibia* first, the other would not be able to sustain the Saw, but moving two and fro would tear the Flesh: let the Saw at first be a little inclined and saw gently, but after faster. Whilst the Surgeon saws the Bones, let a Servant who holds the Leg by the Foot bend it, and bring it a little against the Saw to facilitate its Passage. When the Bones are sawed through, take off the Ligature which kept the Flesh steady below the Knee, and loosen the Stick, and let such a quantity of Blood out as you judge the Patients Strength can bear, and then stop it by the Dressings.

THE DRESSINGS loosen the Turniket a little, that so you may discover the Orifice of the Arteries, and then lay a Vitriol Button on them: let one of the Assistants keep these Buttons on, as well as the dry Pledgits laid on the Bone, whilst you cover them with a great Pledgit of Tow armed with Astringent Powders, as *Bole Armoniack*, *Terra Sigillata*, *Dragons Blood*, *Frankincense*, and a thousand such like things; lay this in the Palm of your Hand, and at once apply it on the Stump. Some cover this with a large Hogs Bladder armed with Styptick Medicines, and lay over all a Compress cut in form of a Cross, applying its middle or plain part on the Stump, and its ends on the Leg. Next there must be three Compresses applied which must be of a competent breadth, and about the third part of an Ell in length, or proportioned to the Part, one of these is to be laid to the Ham, and so brought over the Stump, and applied to the Knee, the middle of the Second is to be applied to the Stump, and so dispos'd as to cross the other, and the third to be laid on the extremity of the Stump, making a turn round the Leg.

To

To keep the Dressings on, take a Roller of three Ells in length, and more than two Inches broad, rolled up at one end, apply it first to the edge of the Stump, and make two turns about it, and then mount to the Knee ascending spirally, and pin it where it ends without binding the Knee, but whether this be above or below the Knee, it matters not very much.

When you have done this, take another Roller of more than two Inches broad, and four Ells long, rolled up at both ends, and applying the midst of the Roller on the center of the Stump, bring both Heads up to the Knee, and make a turn round the part with one Head to stay the other, which you must bring strait down, and so over the Wound, then bring it up, and with the other Head make a round to keep it firm and steady, and thus you must continue to do till the Stump be covered, still keeping one end above the Knee to make several Rounds, for the keeping the other steady; but when the Stump is covered, make several Rounds about the Part, with the Heads alternately to keep the ascending and descending turns steady, and in the last place pin them above the Knee.

Some Practitioners prefer a Ligature of the Arteries to the Vitriol Button, for stopping the Blood. If you would practise this way, you may proceed in this manner. Loosen the Turniket to discover the place whence the Blood issues, and when you have found this, take hold of them with a *Forceps* made with a little Ring to rise and fall, for the holding them firm at pleasure. This sort of *Forceps* is very convenient for apprehending the Artery, and when you have hold of it, take a crooked Needle with a wax Thread, and having passed it into the Flesh below the Artery, with the two ends tie the Vessel, and then laying a small Compress waxed on it, fasten it by two other knots; when you have done this loosen the Turniket to see if there be any other Arteries, and if there be, tie them in the same manner as the first. After the Ligatures are all made, take off the Turniket, and bring the Flesh as far as you can to cover the Stump, and proceed to dress it as is above directed, omitting the Vitriol Buttons and other Stypticks, which are not necessary, except some little Artery, (as most commonly it does) happen to bleed, and in this case you may apply some slight Styptick.

THE CURE. When the Operation is over, let the Patient be laid down, and let the Part be kept supported on a
U 3 Pillow,

Pillow. If Vitriol Buttons have been applied, and no Ligature made on the Vessels, the Hand must be kept on the Stump the first Day for the better applying Medicines, and preventing a Flux of Blood. But in case Ligatures be made, this is needless, at least it is not necessary to continue the Hand on for so long a time.

Some use the Actual Cautery to stop the Blood, but in this way when the Escar separates the Arteries, open and pour out Blood afresh, which often occasions the loss of the Patients Life.

If the Blood be stopped with Vitriol Buttons, the Dressings must not be taken off till two Days after the Amputation, that the Stypticks which are applied, may have time enough to close the Vessels (whereas on the contrary if a Ligature be made, the Dressings may be taken off the first Day, without danger of a Hæmorrhage) and the Second Dressing must be made in the same manner as the first, omitting the Hogs Bladder and Vitriol Buttons, and only strewing on Astringent Powders. The Dressings must be removed as gently as may be, for fear of exciting a Hæmorrhage. When you are once secure from any Flux of Blood, it is then time to remove the Dressings, and endeavour to procure a good Digestion with *Turpentine* and *Yelks of Eggs*, and when you have obtained that degree with *Ægyptiacum*, or *Unguent de Apio*, and Cicatrize the Wound, keeping a Pledgit of dry Lint on the Bone during the whole Cure.

When the Digestion is over, lay Compresses on the stump to press the Part, and hinder the Growth of Superfluous and Luxuriant Flesh, which usually happens at that time.

When the Part is convulsed after the Operation, as sometimes it is from the vehemence of the Pain, and the Hurry and Disorder of the Spirits, let not the Artist lose time by endeavouring to make a Ligature on the Arteries, but let him immediately apply the Vitriol Button to the Part, and Pledgits dipt in some Styptick Water.

This is *Fabricius Hildanus's* Process in Amputations. In the first place he do's not remove the Dressings till the third Day, unless the Pain be very urgent, but he embrocates the remaining Stumps of the Limb twice a Day, with a Mixture of *Oyl of Roses* and *Myrtils*, laying Defensatives on the Neighbouring Parts. After the Second Dressing when he is secure from any Hæmorrhage, he lays aside Astringents, and applies the following, or some like Digestive.

R. Tur-

R. Turpentine washed in Plantane Water ℥iij . Oyl of Roses and sweet Almonds, ā. ℥i . Gum Elemi dissolved and strained, ℥ss . Saffron ℥i . Mix these Ingredients, and with the Addition of the Yelk of an Egg make a Liniment. This he continues till he has obtained a good Digestion, and then he deterges with the following Liniment, or something of the like Nature. *R.* Turpentine washed in Wine ℥iij . Powders of round Birthwort, the Florentine Iris, Flour of Barley, ā. ℥iv . Honey of Roses ℥i . Spirit of Wine, ℥ss . the best Venice Treacle ℥ij . Mix these Ingredients, and make a Liniment.

When the Wound is deterged, he draws down the Skin and Flesh to cover the Bone, and applies an Agglutinating Emplaster on the Stump. This he makes after this or the like manner. *R.* Fine Flour ℥i . Mastich, Frankincense, Dragons Blood, Powder of Roses, Gum Tragacanth, ā. ℥ij . Beat up all in a very fine Powder with the White of an Egg, and as much Oyl of Roses as will bring it to the consistence of Honey; and the next Day if the Medicine be too thick, put some Rose and Plantane Water into it to bring it to a just Consistence. When he finds it expedient to dry the Wound, he strews Powder of round Birthwort, Sowbread, Iris Florentina, Bark of Pine, Guajacum Wood, ā. ℥ss . and when the Agglutinative Emplaster falls off, he applies another.

During the whole Cure, he is careful not to suffer any Oily thing to touch the Bone, using the Actual Cautery to it to procure Exfoliation, but withal, being careful not to touch the Marrow for fear of Inflammation, and defending the Bone with dry Lint, till Nature has invested it with Flesh. If any fleshy Excrecence happens to rise, he consumes it with a Mixture compos'd of Burnt Alum ℥ij . Lapis Calaminaris, Calx of Lead, Cerate, ā. ℥i . Calcined Vitriol ℥ss . reduced into a very fine Powder. In the last place, he cicatrizes the Wound with Emplastr. de Pulmite de Cerrussa cocta, the red Desiccative Unguent, or other like Medicines.

R E M A R K S.

Some time since a young Man in the *Hôtel Dieu* had his Leg cut off, upon the account of a fierce Gangrene on it, but the Wound it self gangren'd again, and the Surgeons were forced to cut off the Thigh. At first he seemed to

do well, but soon after a large hard Swelling arose on the upper part of the Thigh, which extended quite to the Groin, this in some small time gangrened, and killed the Patient. This Observation shews, that internal Gangrenes are incurable, and that it is not enough to take care of Dressing the Part outwardly, but great regard must be had to the Blood to sweeten thar, which sometimes is as sharp and corrosive as an *Aqua-fortis*.

C H A P. XXVIII.

Of the Paronychia or Whitlow.

THE Operation in *Paronychia's*, is an *Aperition of the extremity of the Finger to let out the Pus, which sometimes is lodged under the Periosteum.*

THE CAUSE. A *Paronychia* is a Tumour at the extremity of the Finger, and Root of the Nails on the third Joynt, though sometimes it is found on others.

There are two sorts of *Paronychia's*; in the one the Matter is between the Bone and *Periosteum*; and in the other between the Muscles; and both commonly proceed from a sharp corrosive Humour.

THE SIGNS. When a *Paronychia* is lodged under the *Periosteum*, there is a burning Heat, a sharp Pain, a Pulsation within the Part, a great Tension, and an Acute Fever. When it is only between the Muscles, there is less Heat and Pain, the Pulsation is not so deep, nor the Tension so great, and the Fever is less.

The Heat and Pain proceed from the great Ebullition of the Blood, and the Acrimony of the Matter which molests the Fibres of the *Periosteum*. The Tension arises from the Fermentation and Rarefaction of the Humours, for when any Matter is in Motion, since the Parts shock and mutually repulse each other, they must needs leave Vacuities between them, and by consequence the Matter must occupy a greater space, and compress the Neighbouring Vessels. The Pain and Pulsation proceeds from the Arteries, beating and striking on a sensible Part, which is pained and inflamed, and it cannot be conceived, but that the repeated strokes must necessarily encrease the Symptoms; the Fever proceeds from

from the sharp Humour of the *Paronychia* being absorbed by the Blood, and communicating a Vicious Taint to it.

There is reason to believe the Tumour to be ripe, and the Pus fit to be let out, when the Symptoms cease or abate.

THE OPERATION.

This consists in evacuating the Pus, and making an Aperture on the side of the Finger quite down to the Bone; for the *Periosteum* must necessarily be opened, if the Matter be lodged under it. The Incision as I remarked before, must be made on the side, to avoid cutting the Tendons with the Lancet.

THE DRESSING. Put a small Tent and a little Pledgit arm'd with some good Digestives into the Wound, and cover these with an Emplaster in form of a Cross, then lay over this a Compress cut in the same Figure, and let the center be applied on the Extremity of the Finger, laying the ends along on the sides, and keep all on with a Fillet three quarters of an Inch broad, and about a quarter of an Ell in length; there must be a little Hole made at one end of the Fillet, and the other end must be slit three Inches in length; when it is thus dispos'd, pass the slit end thro' the Hole, and so bring the Fillet strait to the Finger, and then wind it spirally round, ascending and descending gradually. If the Surgeon pleases, he may make a Case of the Skin of any Animal to keep the Fingers warm, and fasten this Case to the Wrist with small Ribbons.

It is very convenient to keep the Arm in a Sling, which may be made of black Taffeta, otherwise a Napkin will serve well enough for this purpose. Put the middle of the Napkin under the Patients Armpits, and bring the two lower ends over the opposite Shoulder, then wrap the Arm in the Napkin half folded with the Elbow down, and the Hand a little raised, and the Thumb uppermost, then bring the two upper ends of the Napkin over the other Shoulder, and order it so that it may fit neatly.

THE CURE. Procure a good Digestion with proper Medicines, as *Turpentine* or *Oyl of Eggs*, forbearing all greasie things which are apt to rot the Tendons, and then deterge the Ulcer.

To cure the Tumour without proceeding to Operation, you must endeavour to appease the Pain with the *Liquor of Worms* baked in an Oven, *Balsum of Sulphur* is good to discuss this Painful Tumour, or bring it to Suppuration, when it is disposed. A Liniment made of *Ear-wax* and *Saccharum Saturni*, with a little *Oyl of Filberds* is excellent, and so is a Cataplasim of *Human Dung*.

R E M A R K S.

Riverius Cent. 4. Obs. 19. mentions a Woman who was cured of a *Paronychia* in less than a quarter of an Hour, by holding her Finger in the Ear of a Cat. Whilst her Finger was there, she found at certain Intervals of time, a Heat extending the whole length of her Arm, and a great Pain at the ends of her Fingers, the Heat would sometimes cease for a small while, and presently after return with a like Pain: The Animal was in such extreme Torment, that two Men could scarce hold it.

Fabricius Hildanus relates, *Cent. 1. Obs. 97.* how he cured a *Paronychia* at the extremity of the Finger. The Patient he tells us was in very great Pain, had a Fever, Vomited very much, though there was no apparent Swelling or Inflammation as yet. For some time he Fomented the Part with a Decoction of *Camomil* and *Melilot*, *Flowers of Fenugreek* and *Quince* in *Cows Milk*. Afterwards he took off the Surface of the Skin, and there appeared under it several Red Spots which he cut, and there came a red Water from them. When this Water was let out, he applied to the part Rags dipt in a Mixture of *Spirit of Wine* and *Venice Treacle*, upon which the Pain immediately ceased, and the next day the Patient was entirely well, however he purged her, and then all the Symptoms vanished.

C H A P. XXIX.

Of Applying Causticks, and making Issues.

THIS is an *Artificial Division of the Skin, by means of some Causticks laid on it.*

THE CAUSES. The occasions which require Causticks, are usually some Distempers of long standing, which cannot be removed by other Medicines, as Catarrhs, Tumours, Arthritick Pains, Callosities in Ulcers, Abscesses not ripe, when some indications require them to be opened, and in general they are useful for purifying the Blood, and discharging all Superfluous Moisture.

THE SIGNS which indicate the application of Causticks, are all or any of those Causes above-named.

The O P E R A T I O N.

When you intend to apply a Caustick to any Part, first lay on an Emplaster with a Hole in the midst, of the same size and shape you design the Escar, and then having wet the Skin with a little Spittle, bruise the Caustick and lay it on, covering it with another Emplaster, and leaving it for a longer or a lesser time, according to the thickness of the Patients Skin, and the Strength of the Medicine.

The most proper places for the application of Causticks in making of Issues are in the Neck, between the first and second *Vertebra*, in the Arm on the outside, in a little Cavity between the *Biceps* and *Deltoides* Muscle, in the inner part of the Thigh in a small place between the *Sartorius* and *Vastus internus*, in the internal part of the Knee, a little below the Termination of the Flexores of the Leg, &c. The principal things to be regarded in Issues are, That as much as possible they be in a Place where the Patient may dress them himself; That they be near the great Vessels, that so there may be a great discharge; and in the last place, that they be in the Interstice of two Muscles, as remote from the Tendons as may be.

To make a good Caustick, take one part of *Calx viva*, and two parts of *Pot-Ashes*, put these in an Earthen Pot, pour hot Water on them, leaving them in Infusion five or six Hours, after that boil them, and filter that which is clear through

through a brown Paper, and evaporate it in a Copper Bason, or an Earthen Pan glazed. There will remain a Salt at the Bottom, which you must put in a good Crucible and melt it, keeping it in a strong heat, till the Moisture be exhale. When you find it is reduced to the form of an Oyl in the Bottom, cast it into a Bason, and cut it into parts of what size and shape you please whilst it continues hot, and put these into a strong Glafs Bottle, stopping it with Wax and a Bladder, because the Air soon resolves the Caustick into a Flour, and for the same reason it must be kept in a dry place. These are the strongest Causticks of all, and perform their effect in the space of half an Hour.

The *Lapis Infernalis* is very useful, for consuming Luxuriant and Superfluous Flesh by lightly passing it over them. To make this, dissolve in a Glafs Vessel what quantity of Silver you please, with about thrice the same quantity of good *Spirit of Nitre*; set this Vessel in a sand Heat, and evaporate about two thirds of the Liquor, then pour the rest hot into a good German Crucible, which must be pretty large by reason of the ebullition which is made, place this on a small Fire, and leave it there till the Matter, which is very much rarified, sinks to the Bottom, then increase the Fire, and it will become like an Oyl; pour this into an Ingot well greased and heated, and it will coagulate, and may be kept in a Glafs well stopd. This Stone may be made with a mixture of Copper and Silver, but then it will not keep for so long a time. If you put in an Ounce of Silver, you will have an Ounce and five Drams of this Caustick.

THE DRESSING consists in covering the Caustick with an Emplaster to keep it on the part, and then laying a Compress over that, binding all on with a Roller more than two Inches broad. After the Caustick has lain on for a sufficient time, take off the Dressings and scarifie the Escar with a Lancet, laying on some good Digestive or a little fresh Butter, continuing this till the Escar begin to separate, and then if you design to make an Issue, put in a small Pea or a little *Orrice Root* round, and keep this on with a small Compress and Bandage; the Bandage must be made of Linen Cloth, long enough to go round the Arm, and three or four Inches broad, and on the Hem or Edge of this there must be two or three Holes made to put Ribbons through, and this Bandage is very convenient, because

because the Patient can dress these Issues himself, and draw it as strait as he judges convenient.

THE CURE. The Ulcer must be dressed twice a Day, putting in a new Pea of *Orrice* every time, and the Cloth changed every time to prevent its stinking. If proud Flesh grow in the Issue, let it be consumed with burnt *Alum*.

R E M A R K S.

Riverius in his communicated Observations, *Obs. 2.* relates, that a certain Person had been for a long time ill afflicted with a Pain in his Back, of which at last he died. Sometime before his Death, he had had an Issue made in his Thigh four fingers breadth above the Knee; upon the Escar falling off, there came away an Ounce and a half of Sanious Matter, and every day after above an Ounce of true Pus. The Man being opened after his Death, there was a great quantity of Pus found in the Lungs, which occasioned his Death. There was found a great Apostem in the Back, from whence his Pain did proceed, and a Chanel extending from the Apostem to the Issue, through which the Pus discharged it self; this Remark do's sufficiently prove how useful Issues are in cases of this Nature.

C H A P. XXX.

Of making a Seton.

A Seton is an Artificial Ulcer made by the passing of a Needle, with a Skain of Silk through the Skin.

THE CAUSE of this Operation, is the same with that of making Issues.

THE SIGNS which indicate Setons, are the same with those of an Issue.

The O P E R A T I O N.

Setons are usually made in the Neck. When the Patient is late down, turn his Head, and pinch up the Skin; then take a Needle made like that which the Packers use, with

a Skain of Silk soaked in *Oyl of Roses*, and pass a Needle through the Patients Skin, leaving the Skain in it. Some use a perforated *Forceps* with a Hole in it, and with this they pinch up the Skin of the Neck, and pass the Skain thro' the Skin.

THE DRESSING consists in laying a Compress on the Seton, and keeping it on with a Fillet round the Neck.

THE CURE. Take care every Day to take off the Dressings, and draw the Skain a little to change it, and continue the Seton as long as the Physicians shall judge necessary.

R E M A R K S.

Fab. Hildanus, Cent. 4. Obs. 4. relates that a Boy of 11 years of Age was subject to Fluxions which encreased very much, sometimes discharging themselves on the Eyes, Teeth or Ears, and causing great Pain in those parts, sometimes again falling on the Throat, Lungs or Stomach, and there causing a Hoarsness of Voice, a Cough, a *Nausea*, Vomiting, and several other bad Accidents, till in fine his Body was reduced to a very Weak, Feeble Condition, at last a *Seton* being made on the Fontanel or Mould of the Head, the Child grew better from Day to Day, and in a few Months was so recovered, that his Friends did not know him, he appearing quite a New Person.

C H A P. XXXI.

Of Cupping and Scarifying.

WET Cupping is the *Scarifying of the Back, to bring the Blood and Spirits into the Part by the help of a great Glass Vial filled with lighted Tow, and applied on the Scarifications.*

Dry Cupping is without Scarification.

THE CAUSE. Cupping is useful in Apoplexies, Epilepsies, Hyfterick Fits, Palsies, Contractions of the Ligaments and Tendons which sometimes happen after Fractures and Dislocations, because when the part is warmed and raised, its Pores open themselves, and receive in the more subtil parts of the Medicines applied to it.

The Ancients applied Cupping-glasses to Venereal Bubo's, Pestilential Tumours, and the Bites of venomous Animals to draw the Venom out of the Part, but later Authors disapprove of this Practice, because, say they, the Poyson insinuating it self into the Mass of Blood, a Cupping-glass is not capable of putting a stop to the Mischief; others again reject Cupping-glasses on all occasions whatever, denying that Scarifications determine the Blood and Spirits towards the Part which is Cupped, or that by diverting the Humours another way, the suffering Part is thereby eased, and its Inflammation abated. Those who oppose this Practice tell us, that if this were true, the part which is cupped would appear inflamed, because it is not possible that the Blood and Spirits should flow very plentifully to a Part without a visible Inflammation of it, which nevertheless in this case is not discernable. Besides if any such Inflammation should arise, the Motion of the Blood would be interrupted by a Division of the Vessels, as it happens in all recent Wounds, and not be determin'd thither by the Pain or Attraction of the Cupping-glasses. Whence they conclude, that once letting Blood or taking any Sudorifick or other proper Remedy, will have a better effect than all the Cupping in the World.

The Ancients very foolishly applied Cupping-glasses on the top of the Head, in an Inflammation of the *Ovula*, and on the *Hypochondria* to stop bleeding at the Nose, or under the Breasts in Women, to stop the Flux of the *Menstrua*, or on the midst of the lower Belly to draw up the Womb, and on the Region of the Kidneys to allay Neuphritick pains.

THE SIGNS which indicate the use of Cupping-glasses, are all those Distempers above mentioned,

THE OPERATION.

There are two sorts of Cupping, the wet and the dry way; the first is designed to draw the Blood; and the latter only to irritate the Part, and rarefie the Humours contained in it.

In order to apply Cupping-glasses, place the Patient in a proper Situation according to the place on which you design to fix them; then rub the Part very well with a warm Cloth, and setting fire to the Tow in the Glass, apply it, and the fire will be presently extinguished, and the Flesh tumefie in that place. In stead of Tow, you may put a small Wax Candle lighted in a little Tin Candlestick on the part, and clap one of the Glasses over this, the Candle will immediately go out, and the Flesh swelling rise up into the Glass, which you may leave on for as long a time as you please. This is the way of dry Cupping.

But if you would draw Blood, make Scarifications on the Part as deep as you judge is convenient, beginning beneath and rising upwards, because if you begin above and descend, the Blood will hinder you from performing the Operation well. The Scarifications must be made a cross one another, that so the Skin may have no check. When this is done, you may apply Cupping-glasses on the Scarifications, in the same manner as in the dry way of Cupping, and the Blood will run into the Glass, which when it is half full must be removed to empty it, and another applied, repeating this as often as there is occasion.

There are three sorts of Scarifications, some Superficial, and these are small scratches which do not enter the Skin, others are midling, and extend to the Flesh, the last sort are larger and deeper, and are slashes. The first are only useful in Distempers of the Skin, and the Incisions in Gangrenes and dangerous Distempers.

THE

THE DRESSING. After dry Cupping lay on the Part a Compress dipt in *Spirit of Wine*, simple or Camphorated, and keep it on with a Napkin folded in three pleats, and fastned round the Breast if the Back be cupt, or with a Fillet if it be the Leg or Arm.

When the Part is Scarified cleanse the Incision with *Spirit of Wine*, and make a Bandage.

THE CURE of Scarifications consists in applying a Desiccative Emplaster to cicatrize them.

REMARKS.

Fab. Hildanus in his *Treatise de tuenda Sanitate* observes, that when there is a *Coma*, a heaviness in the Head, *De-fluxions* on the Eyes or Throat, that Cupping-glasses may then be applyed on the Shoulder-blades, and that the Patient must barely stand before the Fire, and not be in too hot a place, for fear lest the *Vena cava*, which runs along the Back, be too much heated, and the Blood be put into a Ferment.

In *Cent. 4. Obs. 13.* He relates the History of a Man of forty years of Age, of a good Temper of Body, who was seized with a violent Flux of Blood at the Nose. His Physician ordered him to keep himself in a hot place and undergoe a Cupping, which together so encreased his Bleeding, that in a few Hours he lost several Pints. The Flux continued and became so violent, that the Blood discharged it self outwardly, as well as into the Stomach, and in a few Days time, the Patient voided 27 lb. by the Nose. This Observation shews us, that on a like occasion the Patient ought never to be kept in a very hot place, or have Cupping-glasses applied according to the present Practice.

C H A P. XXXII.

Of Leeches.

Leeches are a sort of Water-worms, applied to a Part to draw out Blood.

THE CAUSE. Leeches are applied to such parts as cannot endure Scarification; as the Face, Lips, Nose, Fingers, Joynts, and the Fundament in the Piles.

THE SIGNS that Leeches ought to be applyed, are those above mentioned, viz. a necessity of Scarifying, and an unaptness in the Part to admit of it.

The O P E R A T I O N.

You must not make use of those which are taken out of standing Waters, as Marthes and Pits, (which most commonly have a large Head, and shine in the Night like Glow-worms, and have their Back streaked with Blew) for these often are dangerous and cause Inflammations, Fevers and *Syncopes*; those are best which are found in clear and running Water, are long and slender, have a small Head, and a greenish back streaked with Yellow, and their Belly a little Reddish.

Before Leeches be applyed, let them stand for some Days in a Vessel of clear Water to vomit. When Leeches are kept in a Glass for use, the Water ought to be changed once in three Days, and for about ten or twelve hours before they are applyed, let them be kept in a Box, for this makes them more Hungry, and draw Blood with more eagerness.

Before you apply them, chafe the Part well with a Sponge dipt in warm Water or Milk, and if the Leech do not stick to the Part, lay on a drop or two of the Blood of some other Animal. Put them to the Part in the Box it self, for if you touch them with your Fingers they will be irritated, and will not bite. When the Patient feels several Pricks take away the Box, and if there be not enough fastened to the Part, apply it again.

If the Leeches fall off before they have sucked Blood enough, take others up in a Napkin and apply them to the same

same Punctures which the first have made. When they do not draw enough, cut off the little end of their Tail, for the Blood coming away as fast as they suck it, they will never be satisfied and suck perpetually, besides by this means what quantity they draw may be known. When they have drawn enough you must not pull them away, for then they will leave their Sting in the Wound, but throw some sharp thing or other on their Heads, as Ashes or the like, and then they will quit their Hold; after which you may let a little Blood run, for this carries off any Venom that may happen to be left in the Wound.

THE DRESSING. Wash the Punctures with salt Water, and apply a Compress with convenient Bandage. If the Blood do's not stop, lay on the Punctures some Astringent Medicines, as a Compress dipt in some Styptick Waters, as *Ashes of Galls*, or some other Astringent Powders. However a Compress and Bandage is necessary, and if there be an Inflammation, the Compress may be dipt in *Spirit of Wine* Camphorated; and here note, this is sooner made by repeated extinction of lighted Camphire, than the common Way by a Solution of it.

THE CURE. Lay small Pledgits of Lint on the Punctures, and if there be any Inflammation, let them be dipt in some Spiritous Liquor.

REMARKS.

If Leeches are taken out of a Stagnating or Muddy Water, or have not well disgorged themselves, they sometimes leave Ulcers behind them in the part which they wound.

C H A P. XXXIII.

Of Vesicatories or Blisters.

Vesicatories are certain Applications which raise small Blisters or Blisters on the Skin.

THE CAUSE. The Occasion of applying Blisters are Vertigo's, Fluxions on the Eyes or Ears, Pains of the Teeth, Epilepsies, Apoplexies, Soporose Distempers, the Gout, the Bites of Venomous Animals, and the Stinging of Wasps, Bees, &c.

THE SIGNS which indicate Blistering to be necessary, a relapse one of those immediately above recited.

The OPERATION.

Blisters are raised with *Cantharides* or Spanish Flies dried and powder'd, and mixed with *Leaven*, and so applyed to some one part of the Body. Before you apply any Vesicatory make a light Friction of the part with a coarse Cloth to open the Pores, to make way for the more prompt Action of the Caustick Salts. The Skin of a Child which is thin and of a delicate contexture, do's not require so strong a Vesicatory, as that of a grown Person, and more or fewer Vesicatories ought to be applyed in proportion to the quantity of Serosities you intend to draw.

The Patient may know when a Blister is drawn, by reason he do's then feel the Pain which the Emplaster causes at first.

Blisters must not be opened till after some Days, when the Flesh begins to grow a little harder; for otherwise the Air entring too soon, would create violent Pain.

Blisters ordinarily rise in six or seven Hours. If you desire to have a continual evacuation, leave the Blistering Emplaster on the part, and a Serosity will continually come away. In pains of the Teeth Blisters are frequently applyed to the Neck, and kept running for a long time.

THE DRESSING. When a Vesicatory is taken off, and the Blisters opened, apply a Compress dipt in some Spiritous Liquor, and keep it on with some Bandage adapted to the Part; for instance, on the Temples with a Handkerchief

chief folded Triangularwise, on the Trunk of the Body with the Napkin, and on the Limbs with a Roller.

THE CURE. If you do not desire the evacuation for any long time, take off the Veficatory, wash the Part with some Spiritous Liquor, and then lay on some good Desiccative Emplaster.

R E M A R K S.

Fab. Hildanus, Cent. 6. Obs. 99. relates that a young Fellow playing the fool with some of his Comrades in an Apothecaries Shop, seeing a Box of *Cantharides*, asked what they would give him to eat twelve of those Spanish Flies, they made a Bargain, and presently told him out the number, upon which he took and swallowed very greedily. About Midnight he was tormented with cruel Pains in his Stomach, and pissed Blood. However he was so fortunate as to escape with Life, which was partly owing to the Skill and Care of his Physicians, and partly to their being only in a gross Powder.

Fabr. Hildanus, Centur. 6. Obs. 88. relates, That a certain Person having a Cold Pituitous Swelling on the Knee, a certain Barber applied to it a Veficatory made of *Leaven* and *Spanish Flies*, which Ulcerated the whole Knee, created likewise a vehement Pain, Restlessness and Fever, with a pain in the Reins, Back and Belly, and after that he had a great Heat in the Neck of the Bladder, and could not void any thing besides some drops of Blood, with intolerable pain; but *Hildanus* removing this Cataplasim the pain abated, the Patient made Water without difficulty, and all other Accidents ceased. The Barber being incensed at his removing his Emplaster applied another, but the Accidents returning with more vehemence than before, and the Patient being sensible of the reason, discharged the Empirick. After this he purged him well with Hydragogues, and Sweated him with a Decoction of *Box*, *Guajacum*, *Sassafras*, and *Roots of China* to purge off that Viscous Humour, from whence the Swelling did proceed. In the last place, he applied *Vigo's* Cataplasim hot for a Month together, renewing it twice a Day, and the Patient was cured.

C H A P. XXXIV.

Of the Extirpation of the Uvula.

THIS needs no Definition.

THE CAUSE. The occasion of this Operation is some Erosion, Gangrene, or Exorbitant Swelling of the *Uvula*, which hinders the Patient from Breathing or Swallowing his Aliments.

THE SIGNS of a Gangrene in the *Uvula*, are the same as in any other part of the Body. When a Man cannot Swallow or Breathe without great difficulty, and there seems to be a lump in the Throat, it is a sign the *Uvula* is inflamed; besides this may be easily seen by inspecting the Mouth.

The O P E R A T I O N.

Depress the Tongue with the *Speculum Oris*, then take hold of the *Uvula* with a *Forceps*, and cut it off with a pair of Scissars.

THE DRESSING. No Pledgit, Compress or Bandage, can be applied to this Part.

THE CURE consists in stopping the Blood with Styptic Gargarisms. If it be requisite to procure a good Digestion, make a Gargarism for this purpose, with a Decoction of *Mallows*, *Marsh-mallows*, white *Lily Roots*, *Figs*, and other like ripening Ingredients, and when the Patient uses it, let him retain some of it for a considerable time in his Mouth. In the last place, make a detergent Pisan with the *Vulnerary Plants* or warm Wine, which often suffices alone.

R E M A R K S.

Fabr. Hildanus, Cent. 2. Obs. 19. relates the History of a young Man, whose *Uvula* was so large he could not breath without great difficulty, it filled up all the Roof of his Mouth quite to the *Dentes Incisoris*. The Swelling was hard, livid, unequal, painful, and distended with black Veins, and adhered to the Roof of his Mouth. The Patient

tient putting himself into the Hands of a Mountebank, soon after died.

C H A P. XXXV.

Of the Varices in the Veins.

THIS Operation is a *Ligature or strait Bandage of a Vein, which is dilated.*

THE CAUSE. The internal Cause of *Varices* is a Thick, Grumous Blood, coagulated by some Acid, which hinders the Circulation, and necessarily dilates the Vessel.

Women with Child frequently have Varicose Swellings in their Legs, because the Iliac Vessels being compressed by the *Fetus*, the refluxent Blood cannot pass in a due quantity through them, and consequently must regurgitate and distend the Vessels in the Feet and Legs.

THE SIGNS. These Tumours are great swollen Veins, of a Violet, Livid or Black colour, which frequently are seated on the Legs near the Knees. These Tumours upon the least compression disappear, but instantly return. Sometimes these Swellings are very serviceable to the Patient, especially if they are Hypochondriacal or Melancholy Persons, but if the Blood ferments in them, and seems dispos'd to burst the Vein, threatening a Malignant Ulcer by its sharpness, or the Pain be violent, then you may make the Operation.

THE OPERATION.

Pinch up the Skin across the Tumour, and let a Servant hold one end; do you take the other end and make an Incision lengthways, till you have laid the Vessel bare, then take the Vein with a Hook to separate it more conveniently from its Membranes, and pass a Needle threaded with a double waxed Thread, and tie the Vein below the Dilatation, and open the Vessel with a Lancet to let out the Blood. If you have no mind to make this Operation, you may open the Vein with a Lancet to let out the Blood, as in Bleeding, and when you think you have drawn enough make a

strait Bandage, and forbear undoing it till the Swelling be down, and the Vein reduced to its Natural Size; or when you have taken away Blood enough, apply a Plate of Lead on it with Astringent Medicines, and bind this Plate on very strictly, for by this means the Blood being hindred from passing through that Vein, it will by degrees be lessened, till it is entirely gone.

If you have no mind to open the *Varix*, you may apply a Sponge dipt in a Decoction of *Roch Alum*, *Common Salt*, and four *Pomgranates*, applying it twice a day, and continuing it on for the space of a Month. When the *Varix* appears to be dried away, remove the Sponge and keep the part bound strait for a Month or two, till the Swelling entirely disappear.

The following Medicine is good against all Pains and Swellings of the *Varices*. R. *Unguent of Populeon*, *Mucilages of Psyllium*, *Linseed* and *Fenugreek* $\bar{a}$. $\frac{3}{4}$ ss. *Oyl of Camomil*, *Flower of Beans* $\bar{a}$. $\frac{3}{4}$ j. and with *Wax* $\frac{q}{s}$ make a Cerate or Emplaster.

THE DRESSING. After the Ligature is made on the *Varix*, dress it with some good Digestive or Balsam, that so the extremities of the Vessels may cicatrize, and then put Dossils into the Wound, and lay on a Pledgit arm'd with some good Digestive, and over this a Compress, keeping all on with a Roller above two Inches broad, and of a length proportioned to the Part, and rolled Spirally on it.

THE CURE consists in dressing the Wound twice a Day, Deterging it, and then Cicatrizing it. The Threads will rot in the Suppuration, and then they may be drawn out.

It is not enough to treat the Patient in this manner, but you must farther be careful to sweeten the Blood with Sudorificks, as a Decoction of *Guajacum*, *China* and *Sarsaparilla*, not forgetting Purging and Bleeding, if the Physicians approve of it.

R E M A R K S.

Marcus Aurelius Severinus, in his Book *de Chirurgia efficaci*. Ch. 37. relates, That a certain Person had a *Varix* on the Knee, formed by the conjunction of several Veins united in such manner, that they made a little Hillock which after separated, and proceeded in their course up into the Groin.

Bartholin

Bartholin in Hist. 56. relates that a young Fellow continuing 13 Days without making Water, all the Veins of his Body became Varicose, and several of them broke, but upon giving the Patient Diureticks he made Water, and the Swelling of the Vessels went off.

C H A P. XXXVI.

Of Reducing the Fundament.

THIS Operation is the *Reduction of the Gut into its Natural place, when it is fallen out.*

THE CAUSE. The falling out of the *Rectum*, proceeds from straining in going to Stool, from a *Paralysis* of the Muscular Fibres of the *Sphincter*, or a Relaxation of them by a constant Defluxion of Humidities, or some vehement Cough, long Loosness, Dysentery, or the Piles, any of which are sufficient to produce this effect.

THE SIGNS. This Disease is visible enough, part of the Gut hanging out of the *Anus*.

If it be of long standing, the Reduction is very difficult and dangerous, and there being most commonly a large Tumour, the Gut is inflamed and gangrenes.

If it proceeds from a *Paralysis* of the *Sphincter*, the Disease is very hard to cure, and whatever pains you take to replace it, it notwithstanding soon falls out again. But when it is recent or in young Persons of a good Habit of Body, it may be remedied without any great difficulty.

The OPERATION.

To reduce the Fundament, place the Patient on his Belly with his Head low, and his Hips raised, and having dipt your Fingers in *Oyl of Roses*, gently thrust in the Roll formed by the extraversion of the Rugous Membrane of the *Rectum*, or take a Compress dipt in warm Milk, and with this thrust the Fundament up.

THE DRESSING. Foment the Part well and apply Astringents to it, keeping them on with the double T, or the Roller with four Tails suspended with a Collar. The way of making which Bandage, is described at large in the Operation of cutting for the Stone, and the *Fistula in Ano*. **THE**

THE CURE. Let the Patient lie on his Belly for several Days together, that so the Gut may have time to recover its Strength, and rub the Part well with *Oyl of Beetles*. This *Oyl* is made by the infusion of a good quantity of *Beetles* in *Oyl of Turpentine*, exposed to the Sun for a considerable time. *Oyl of Turpentine* alone is sufficient for this purpose.

If the Belly be bound give Clysters frequently, or let the Patient take an Ounce of *Oyl of sweet Almonds* with a dram of *Cream of Tartar*. If the Pain be very troublesome, foment the Part with a Decoction of *Cowslip* and *Camomile* Flowers in Milk: Fumigations of *Frankincense* and *Mastick* are good; in short, to prevent the Fundament from falling out again, use all sorts of Astringent Remedies.

R E M A R K S.

Fab. Hildanus, Cent. 3. Obs. 76. tells us, that a certain Country-Man going to Stool, the *Rectum* fell out, and it being vehement cold Weather, he was seized with so sharp a Pain, that he was forced to remain in the place, being unable to stir. The Gut grew as big as an Egg, and his Excrements which were very liquid, came away perpetually. *Hildanus* being called to him, treated him in this manner. In the first place he applied this Cataplasm to the *Anus*. *Rx.* *Leaves and Flowers of Tapsus Barbarus*, *Flowers of Melilot* and *Camomile*, *Roots and Leaves of Mallows*, $\bar{a}$. one Handful, *Seeds of Linseed and Fenugreek*, $\bar{a}$. $\mathfrak{z}\text{ss}$. *Anise-seeds* $\mathfrak{z}\text{i}$. Boil the Ingredients in Cows Milk, and apply Stuphes wrung out of it, continuing them on for the space of an hour; then he strew'd a little of the following Powder on the Gut. *Rx.* *Red Roses*, *Pomgranat Peels*, *Cypress Nuts*, *Mastick*, *Frankincense*, *Crocus Martis*, *Calx of Lead*, Mix equal parts of these, and make a Powder. Then hanging the Patient up by the Heels, and having wrapt his Finger in a very fine Rag dipt in the Decoction, he put it into the Gut, and gently thrust it into its Natural Place. Then he anointed the *Os Sacrum* and the Rump-bone with a Liniment made of *Oyl of Roses* and *Worms*, $\bar{a}$. $\mathfrak{z}\text{i}$. *Oyl of Rose-buds* $\mathfrak{z}\text{ss}$. mixt all together. In the last place, he purged the Patient with the compound Syrup of *Roses*, made with *Rhubarb*, *Agarick* and *Senna*, having first bled him in the Arm.

C H A P. XXXVII.

Of Reducing the Womb when it is fallen out.

THis Operation is the *Restoring the Neck of the Womb to its Natural place.*

THE CAUSE. The Relaxation of the Neck of the Womb after Delivery, sometimes proceeds from the unskilfulness of the Midwife in drawing too violently its *Rugæ*, and tearing it from the Parts to which it adheres, and sometimes it arises from the Natural Laxity of the Part.

The abundance of Humidities which flow hither, sometimes cause this falling out of the Womb, as it is commonly, but improperly, called, since it never is the Body of the Womb which comes forth, but the *Vagina* only.

THE SIGNS. The falling out or Relaxation of the *Vagina*, may be perceived without any great difficulty; there appears a Thick, Hard, Round Substance not unlike a Gut, which hangs between a Womans Legs, and has a Roll at bottom with a Hole in the midst, which is commonly mistaken for the inner Orifice of the Womb.

A simple Relaxation of the Neck of the Womb is not dangerous, if there be no Inflammation, Ulcer, or Gangrene. When the Disease is recent, there is no great Difficulty in curing it, but if it be of long standing, it is incurable. If it proceed from an internal Cause, and the Relaxation encrease by degrees, the Distemper is curable; but if the falling out of the Womb proceed from some external Cause, as the straining of a Woman in Labour, or the Midwives forcibly drawing out the *Rugæ*, there is but little probability of Success.

The O P E R A T I O N.

For the restoring the *Vagina* to its proper place, let the Patient lie on her Back with her Hips raised, and the Artist having first Humected his Fingers with *Oil of Roses*, may then gently thrust it into its Natural place. If the *Vagina* be very much tumefied and cannot re-enter, he must by no means handle it roughly, for fear of an Inflammation or Gangrene; but he must humect and foment it with Emollient Decoctions,

Decoctions, and forbear reducing it till the Swelling be dispersed. If there be a Mortification already on the *Vagina*, it must be speedily cut off, which is the only means he can have recourse to save the Patients Life. For the doing this, let him make a Ligature on the Sound part, and cut off that which is corrupted; and if there be a *Cancer* draw the *Vagina* to him, and extirpate that by the Roots, stopping the Blood with good Stypticks.

THE DRESSING consists in introducing a Pessary into the Neck of the Womb, which is to be done in this manner. Take a good thick bit of Cork, and cut it into the shape of a Cylinder of two Inches or more in Diameter, in proportion to the largeness of the *Vagina*. This must not be round, but five or six cornered, or of any other Multangular Figure for the better retaining it, and must have a Hole in the midst to give Passage to the *Menses*: This Pessary must be dipt in white Wax to prevent it from rotting, and likewise from hurting the sides by its inequalities; and must be introduced as far as is possible into the Neck of the Womb to retain it, and be kept in till the Person be cured, or all her Life-time if there be a necessity for it.

THE CURE. For restoring the Tone of the *Vagina*, make a Fumigation with the Skin of an *Eel*, or *Mastic* and *Olibanum*. Fomentations with *Spirit of Feverfew* *Camphorated*, cure obstructions of the Womb, and dry up the Superfluities, or a Pessary may be put up into the *Vagina*, as was above directed. If any Flethy Excrecences grow in the Neck of the Womb, cut them off. If there be any Venereal Ulcers, dry them up with *Lime-water* mixt with *Spirit of Wine*, or R. *Spirit of Wine* *Camphorated* ℥iv. *Olibanum* in Powder ℥i. *Saccharum Saturni* ℥ss. *Burnt Alum* ℥i. Dissolve all these together, and apply them hot; or make a Nutritum with a sufficient quantity of *Oyl of St. Johns-wort*, *Oyl of Elder* and *Lime-water*.

REMARKS.

Kerkringius in *Obs.* 53. relates that a certain Woman having for a long time been incommoded with a Flethy Excrecence hanging out of the Lips of her Privities, every one thought it to be a falling out of the Womb, but it being opened after her Death, it appeared to be an Excrecence of the *Vagina*.

The

The following History made a mighty noise some time since, both at *Paris* and *Tholouse*. A certain young Woman at *Tholouse* had a Relaxation of the *Vagina*, resembling a Mans Yard, and some pretend she abused it that way, it being six Inches in Length, and four in Circumference, in the middle, where it was very hard. This falling out of the *Vagina*, gradually encreased from her Childhood, she was searched by the Physicians of *Tholouse*, who gave their Opinion, that this falling out of the Womb was a real Yard, and upon this Determination, the Magistrates of the Town ordered her to go in Mans Habit. In this Equipage she came to *Paris*, where she got Money by shewing her self, till upon assurance that she was a Woman, and a promise of being cured, she was brought into the *Hôtel Dieu*, where the descent was soon put up, and she was forced to resume her Female Dress to her great Regret.

C H A P. XXXVIII.

Of opening Abscesses.

THis is an Incision made into an Abscess, to let out the Pus contained in it.

THE CAUSE of Abscesses is some gross Humour, which being brought into a Part by the Circulation of the Blood, and being not able to pass through the narrow Channels is congested there. This Feculent Matter is formed of a crude, viscous Chyle, coagulated by Cold; or some acid or astringent Applications, or a thousand like Accidents.

THE SIGNS which discover an Abscess, are a great Pain, Inflammation, and Pulsation of the Part, and a Swelling which gradually encreases to its height; but when the Suppuration is compleated, the Pulsation and Pain cease, the Tumour grows softer than at first, and becomes white in some places.

The OPERATION.

The Tumour must be opened with a Lancet, or some Caustick.

If you would make the Operation with a Lancer, chuse the thinnest and most depending part, to avoid putting the Patient to more pain than need, and giving the *Pus* a free discharge. The Orifice must be too large rather than too small, for the more convenient applying of Medicines and evacuating the *Pus*, which sometimes is Grumous and Concreted.

When the Abscess is very large, you must not empty it at once, for fear the Patient fall into a *Syncope*, nor squeeze it to express the Matter, for fear of making a contusion of the tender Flesh.

If the Skin which covers it be thick, as for instance in the Heel, pare it for making an Incision more conveniently and easily.

In opening an Abscess, hold the Lancer between the Extremities of the Fore-finger and Thumb, in the same manner as in bleeding; but if it be large and the Skin be thick, as in the Thighs and Buttocks, hold it between the Thumb and the middle Finger, that so you may employ more force in the using it.

If the Patient be timorous, you may open the Abscess with a Caustick in the manner above directed, and this is done with less Pain. If you endeavour to break the Tumour by Topical Applications, as the *Dung of Animals*, or Humane Excrements, which are best of all, let them be applied as hot as the Patient can endure them, and be kept on the Part with a Compress and Bandage. But observe here, it is by no means adviseable to wait till some swellings break of themselves; for instance, such as are in the Breast, Belly, or Fundament, or near any Bones, Tendons, or other Nervous parts, because the long detention of the *Pus* in those parts is apt to rot them, or leave *Fistula's* behind it. The same caution is to be us'd in Venereal Bubo's, because the Pocky Venom if it be not soon discharged, is apt to infect the Mass of Blood, and so in *Paronychia's* for fear the *Pus* rot the Tendons of the Finger if it be kept in too long.

THE DRESSING. This consists in putting Dossils of dry Lint into the Wound (which like a Sponge absorb the Superfluous Moisture) with a dry Pledgit and a Compress over them, keeping these on with a Bandage adapted to the part.

THE CURE. Take off the Dressings twice a day, endeavouring to procure a good Digestion, and when you have obtained this, Deterge and Cicatrize.

Besides

Besides local Applications, internal Medicines are of very great use in the cure of Abscesses, as Purgatives to cleanse the Stomach and Guts, Alteratives to purifie and sweeten the Mass of Blood, of which last kind are all Sudorificks, v. g. *Diaphoretick Antimony, Powder and Salt of Vipers*, the Dose of which is about half a Dram in two or three Spoonfuls of *Carduus Water*, or any other convenient Vehicle.

In case there be a Fever, you may make use of some preparations of *Nitre*, as *Nitre Antemoniated, Sal prunellæ, &c.*

REMARKS.

Bartholin Cent. 1. Hist. 30. tells us, that a certain Child of four years old (who had a Dropsie of the Head, and no Member bigger than a Mans Thumb) had an Abscess upon the Spine in the Region of the Loins; upon opening this Swelling, there issued out a great quantity of Blood, and the Head became less, but the Child died within three Days after. The Author conjectures, that this Abscess had a Communication with the Spinal Marrow, and that the *Medulla Oblongata* was corrupted.

CHAP. XXXIX.

Of the Hydrocephalus or Dropsie of the Head.

THis Operation is an Incision made in the Head, to let out the Waters lodg'd in that Part.

THE CAUSE. An *Hydrocephalus* is a Watry Tumour on the Head.

This Distemper most commonly proceeds from an Extravasated *Lympha*, occasioned by some Blow, Fall, Wound or Compression of the Vessels. This Water is contain'd in different places, as v. g. between the *Pericranium* and the Teguments, between the *Cranium* and *Dura Mater*, between the Membranes of the Brain, or in its Ventricles.

THE SIGNS. When the Water is between the *Pericranium* and the Skull, the Swelling feels soft; if it be lodg'd between the Skull and *Dura Mater*, or in the Substance of the Brain, there is a great Pain in the Head attended with

a *Coma*, the Head is large and heavy, and in Children it is Swoln, their Forehead is prominent, and their Eyes run with Water.

Children most commonly die of this Distemper, and if the largeness of their Heads encrease it is an ill sign; if the Water be lodged in the Ventricks of the Brain, there is no cure to be hoped for.

If a *Hydrocephalus* be accompanied with an Apoplexy or Lethargy, Death is not far off. If the Patient void Blood at the Nose, it is a sign the *Lympha* is very Acrimonious and Pungent. This Distemper is Chronical, and frequently Mortal to the Patient.

If the Water be lodg'd between the Teguments and the Skull, the Distemper is curable; but if it be beneath the Skull there is no great Hopes; however if the cure be attempted, it must be done in the following manner.

THE OPERATION.

Make an Incision through the Teguments with a Lancet, and let the Orifice be large enough, because the Water most commonly is thick and foul, and let it in the next place be made in the lowest part to discharge the Swelling, which must be done at diverse times, and not at once, for fear the Patient fall into a *Syncope*.

When the Water is beneath the Skull, apply the Trepan, and if it be under the *Dura Mater*, pierce that with a Lancet.

THE DRESSING is the same as in the Trepan, and is described in the Chapter concerning that Operation, where the Reader if he please to take the pains may find it.

If the Water be only under the *Pericranium*, the putting a *Cannula* into the Incision is sufficient.

THE CURE. Confine the Patient to a regular Diet, let all his Food be drying, as roasted Fowls, &c. and let him drink good Wine. Let his Exercise and Sleep be moderate, and let him frequently take Purgative, Diurerick, Diaphoretick, and Cephalick Medicines.

The best Purgatives in this case are Hydragogues, as Powder of *Falap* ʒiſs. in any little Vehicle, Resin of *Falap*, from 8 to 15 gr. in Conserve of *Roses*, Scammony from 8 to 15 gr. in the same Conserve, or its Resin, from 8 to 12 gr.

The

The best Diureticks, are *Volatile Salt of Amber*, *Sal Vegetabile*, *Nitre refined*, or some drops of *Spirit of Salt*.

The best Diaphoreticks are the Roots of the Sudorifick Plants, as *Sarsaparilla*, *China*, or *Guajacum* boiled in a Prifan, and *Diaphoretick Antimony*, Powder or Salt of *Vipers*, the Dose of which we have frequently repeated.

REMARKS.

Some years since there was a Girl of ten years of Age shewn at *St. Germain's Fair*, whose Head was too Foot and three Inches in Circumference. This Deformity began to appear some time after her Birth, and she was so stupified with it, that she could neither Speak nor Walk, only some times she would cry like a little Child; her Skin adhered to her Bones, and her Legs were crooked, she lived upon Milk and Spoon-Meat, and the Bones of her Head were separated, especially in the place of the Fontanel.

Kerkringius assures us, that in opening a Child of three Months and a half old, who died of an *Hydrocephalus*, he found nothing besides a thick saline Serum in the Brain.

Tulpius tells us, he had taken five Dutch pints of Water out of the Head of a Child, and its Brain had lost its round Figure.

Kerkringius assures us, he had found a Brain in a young Lad of fourteen years of Age, without any Consistence. This Lad in his Life-time, had been very stupid and drowsie, there was a distance between the *Pia-Mater* and the Brain, and another between the Brain and the *Cerebel*.

In the *Miscellanea Curiosa*, there is a Relation of the taking 30 Ounces of clear Saline Water out of the Head of a Child of one year old. And first those who dissected him did imagine there was no Brain, because it had lost its globous Figure, and the *Medulla Oblongata* adhered to the Arch of the Bone. In prosecuting the Dissection, there was no far beneath the Skin, which always is found there in Children. There was a great quantity of Water in the *Thorax*, like that in the Head. The Kidneys were of a very unequal bigness, the Pituitary and Pineal Glands in the Brain were wanting, and in its *Basis* there were several Nervous Filaments, which were judged to belong to the eighth pair, and were besmeared with a thick Mucilage.

C H A P. XL.

Of Opening parts imperforate.

THIS Operation is *making an Orifice with an Instrument in parts where the Natural ones are deficient.*

THE CAUSE. The Occasion is a deficiency in Nature, when Children are born with their Ears, Nose, Mouth, Privities, Yard or Fundament closed with a Membrane (which is a continuation of the Skin) or some Fungous or Schirrous Excrecence.

THE SIGNS. These defects are visible upon inspection, and the Child which is so imperforate, cannot breath through its Mouth or Nose, or void its Excrements by its Fundament.

If the Auditory passage be stoppt by a thick Membrane, the Child will remain deaf all its Life-time, unless this impediment be early removed. If the *Rectum* in Girls open into the Privities, this is incurable, and the Excrements will be voided that way.

The O P E R A T I O N.

The *Fœtus* naturally has a Membrane which covers the Drum of the Ear, and if this Membrane be very thick, and Nature of its own accord do's not resolve it, you must pierce it with a Lancer, otherwise the party will be deprived of Hearing.

If the passage be stoppt by an Excrecence, cut it off with a pair of Scissars, or make a Ligature with a Thread, straitning it by degrees; but the Scissars are best, because the Ligature is some time before it takes it off. Sometimes this Fungous or Schirrous Substance possesses all the Duct, and then no Scissars can reach it; in this case you must have recourse to Causticks, to consume the remaining Carnosity. When you use these, you must be very careful to prevent them from hurting the Drum of the Ear, for if they should touch this, they would not fail to corrode it through, and the Party lose his Hearing for ever; to prevent which Mischief, I think it would be convenient to fasten them to the end of your Probe, that so you may draw them out at pleasure.

When

When the Childs Nostrils are closed by a Membrane, it must be cut in the midst lengthways. Sometimes Childrens Nostrils adhere together after the Small Pox, in which case they may be separated with a *Spatula*; but if they adhere too firmly, or are stoppt by some Carnosity, the Lancer must be used,

Sometimes the *Urethra* is closed by a Membrane, which hinders the Child from making Water. In this case an Incision must be made with a strong Lancer directly down, for fear of Wounding the *Glans*. If the *Glans* happen to be closed at its extremity, and perforated under the *Penis* in the *Urethra*, open its extremity with a Lancer, and introduce a Leaden pipe to pass through, and Scarifie the preternatural Aperture, and Cicatrize it, and then bind up the Yard with a narrow Filler, leaving the Child to piss through the Pipe.

If the *Urethra* were stoppt through its whole length, you might pierce it with a Bodkin, and then put a Leaden Pipe in till the Duct were closed, for without this the sides would grow together, and the passage be stoppt as before.

If the *Anus* be closed by a Membrane, you may make an Incision lengthways with a Lancer, but if it be stoppt by a Carnous Excrecence, you must pierce the Flesh till the *Meconium* appear, but this is dangerous, and very often the Child dies in the Operation.

If only the Entry of the *Vagina* be closed by a Membrane, you may divide it with a Lancer; but if the sides of the *Vagina* adhere together, you must place the Patient on her Back with her Knees rais'd, and her Thighs spread, and so make an Incision with a crooked Knife, beginning above, and ending below, with the back of the Instrument turned toward the *Nymphæ*, and in this manner you may proceed to cut till the *Vagina* be opened.

THE DRESSING consists in introducing Tents armed with good Digestives into the Wound, if there be any Fungous or Carnous Excrecences, which may require a Suppuration to consume them. If there be no necessity of procuring a Digestion, introduce *Cannula's* or Pipes of Lead proportioned to the largeness of the Incision, to hinder the parts from adhering together; and for the making these Pipes more easie, let them be well smeared with *Oyl of Roses*.

THE CURE. When there is a necessity of making a large Wound, as there is in cases of Excrecences and Fun-

gus's, let the Patient be prepared by bleeding, Clysters, and other proper Medicines before the Operation, and after it is performed let him be confined to a regular Diet.

REMARKS.

Van Horn tells us, he had seen a Child whose Yard was perforated near the *Scrotum*, and the *Urethra* quite closed up, who had an Artificial *Urethra* made in this manner: The Surgeon first made an Incision the whole length of the Yard, then he put in a Leaden Pipe and stitched the Flesh on it, and after the Wound was Cicatrized, there remained callous Channels, through which the Childs Urine passed.

Some years since in the *Hôtel Dieu* at *Paris*, there was a Child who had no *Urethra*, and its two Testicles were contained each in a separate *Scrotum*. The Yard had a slit between the two *Testes*, which resembled the Privities of a Woman, which made most, though untruly, mistake this Child for an Hermaphrodite, for the Probe when it was put into the slit, past into the Bladder, and it appeared upon Dissection, that he had not any of the Female Organs of Generation.

CHAP. XLI.

Of cutting Tongue-tied Children.

THIS Operation is *the cutting the Ligament of the Tongue, when it extends too near its Tip.*

THE CAUSE of cutting it, is the Inconvenience which arises from its length, as that the Child can never speak plain, because the Tongue has not liberty to strike against the Roof of the Mouth, for the forming Articulate sounds.

THE SIGNS. The length of the *Frenum* is visible enough, it appearing continued to the tip of the Tongue. This Inconvenience is not in any manner dangerous, but when it is cut with the Nail, as Midwives commonly do, there is a Contusion made, which often becomes an Ulcer difficult to be cured.

The OPERATION.

Hold down the Childs lower Jaw, and lift up the Tongue with a Fork, which must be round and blunt at the point, and cut the Ligament (as near the Tongue as possible) quite to the Roots, taking care not to divide the large Vessels, for fear of a troublesome Hæmorrhage.

The Surgeon if he please may do this more dexterously with his Fingers, without using the Fork at all. For this purpose, let him depress the lower Jaw with the Thumb of his left Hand, and press the Tongue with the middle Finger, and then let him cut the Ligament which is between his Thumb and Finger quite to the Root, avoiding the Vessels.

THE DRESSING. Lay on a Pledgit dipt in some Styptick Water, to stop the Hæmorrhage if any happen, or if the Child be not old enough to be perswaded to keep the Pledgit in the Mouth, wash the Part with some Styptick Water.

THE CURE consists in passing several times a Day the Finger under the Childs Tongue, to prevent the Tongue from adhering to the lower Jaw.

REMARKS.

Some Children have had their Tongue so strictly tyed by this Ligament, that they could not suck, and so have died.

C H A P. XLII.

Of the Coalition of the Fingers.

THIS Operation is *the Separation of the Fingers, when they grow together by Incision.*

THE CAUSE. The Fingers sometimes are united by an intervening Membrane, and the Hand resembles a Goose Foot, and sometimes they grow together without any *Medium* between.

The Union of the Fingers in the first Case, which is only a continuury of the Skin proceeds from the Imagination of the Mother. He who would see what Impressions the Mothers Imagination can have upon the *Fetus* in the Womb, may find this Matter explained at large by the Famous *Malbranche* in his Treatise of *the Search after Truth.*

In the first Formation of the *Fetus* in the Womb, the Fingers are soft and glutinous, and for this reason hapning to be preßt together, they grow in the same manner as the edges of a Wound.

THE SIGNS. This Male-formation is visible enough.

THE OPERATION.

This is made by cutting the Skin between the Fingers, when they are joined by an intervening Membrane; but if they are glewed together without any *Medium*, by dissecting gently each Finger.

THE DRESSING. Bind up each Finger with a small Fillet to prevent them from touching, and adhering to each other after the Operation. Or use the Bandage called the Gantlet, which is made after this manner.

Take a Roller about two Inches broad, and about 3 or 4 Ells in length, and rolled up at one end. First apply this on the Wrist, and make two Rounds about it, then pass obliquely on the *Metacarpus*, and proceeding to the end of the Thumb, descend spirally, making an X on the first Articulation of the Thumb, then make another round about the Wrist, and reascend on the back of the Hand, to the extremity of the Middle Finger, and cover that, then descending Spirally, make an X on the first Articulation, that is on
that

that next the Wrist, and make Circumvolutions about the Wrist, making a small edging every time the Filler goes round, that the upper part of the Hand may be covered just in the same manner as the three first Fingers were.

THE CURE consists in laying Pledgits of dry Lint arm'd with Desiccative Powders between the Fingers, and so Citatrizing the Wound.

REMARKS.

Kerkringius tells us, that in the year 1688. there was found in the River Ya a Child which had seven Fingers on each Hand, eight Toes on the right Foot, and nine on the left, every one of which was perfectly well formed.

CHAP. XLIII.

Of Extracting all Extraneous Bodies.

THIS Operation is the taking out any unnatural Substance, which may happen to be lodg'd in some part or other of a Humane Body.

THE CAUSE is that Extraneous Substance which is prejudicial to the Person.

THE SIGNS. Whilst any such Body remains lodg'd in any part, there is most commonly a perpetual Pain.

THE OPERATION.

If a Bullet be lodged in the Part, you must endeavour to extract it upon the first Dressing, for fear lest when the Inflammation increases it be pent up.

For the better extracting the Bullet, place the Patient in the same posture that he was in at the time he received the Wound, and then dilate if it be necessary, and seek for the Ball with the Probe, and when you have found it, extract it with the Forceps, Extracter, Terebellum, Ducks, Cranes, or Ravens Bill.

If a Bullet or any other extraneous Body whatever enter the Flesh so far, that it cannot be conveniently brought away,

way, search on the opposite side with the Finger, and when you perceive where it is lodged by its hardness, make an Incision on it avoiding the Vessels, and fetch it away through the Orifice. When it enters the Bone, stir it gently for fear of breaking off some Splinter. When the extraneous Body cannot be drawn out without Violence, you may wait for the Digestion which frequently throws it out.

If a Pea, Cherry-Stone, or any the like small Body fall into the Ear, let the Patient lie on his sound Ear, and bring it away with a small *Forceps*, but if it be so large as to fill the Cavity of the Ear, and you cannot apprehend it, introduce a Probe with some Glutinous Matter at the end, that so it may stick to it, and come away. If some insect creep into the Ear, kill it by pouring hot Oyl in.

If Sand, Dust, or any such like Body fall into the Eye, lift up the Eye-lid and put under it one of those Stones found in the Head of Crabs, and called Crabs-Eyes, and by some means or other oblige the Patient to sleep, for so this will not come away till it has cleared the Eye, this way is propos'd by *Fab. Hildanus, Cent. 2. Obs. 13.*

If any Splinter of Wood hurt the Eye, lift up the Eye-lids and take it away with a small *Forceps*, or a piece of Rag rolled up and wetted at one end with the Patients Spittle, or a little Lint, or a bit of a Sponge dipt in *Rose* or *Plantane Water* at the end of a Probe. If it be Dust fetch it away with a *Collyrium*, or if it be a Scale of Iron, apply the Loadstone.

If a Body be lodg'd in the Nose extract it with a *Forceps*, or cause the Patient to Sneeze with Powder of *Tobacco*, *Hellebore*, or any other good Sternutatory; or if these do not bring it away, you may let it alone, and it will fall into the Patients Mouth of its own accord.

If any Body be stop't in the Throat, as for instance a Bone, give the Person seven or eight Grains of *Gummi Gotta*, or if the Accident be very pressing, the same quantity of *Emetick Tartar* in some liquid Vehicle. If these are not sufficient to bring away this Extraneous Body, open the Patients Mouth, Depress his Tongue with a *Speculum Oris*, and bring away the unnatural Body with a *Forceps*.

If the Body be so far down in the Throat, that you cannot apprehend it with a *Forceps*, take a piece of Sponge as big as a small Nut, and fastning it with a Thread, let the Patient swallow it, and then draw it back, and by this means you may often bring up any Extraneous Body lodged in the

the Throat, or you may thrust it down with a Wax Candle.

THE DRESSING. Apply Compresses dipt in some Astringent and Resolvent Liquor to prevent any Inflammation, or use Gargarisms of the same virtue.

THE CURE. If the Extraneous Body has made any Wound, or inflamed the Throat, let the Patient abstain from all solid Food, for fear least the Aliments encrease the Inflammation by fretting the Parts in their Descent into the Stomach, and let him feed on good Broths, and take cooling Clysters, having recourse to Bleeding, if the Inflammation be very considerable.

R E M A R K S.

In using Sternutatories to bring Extraneous Bodies out of the Nose, take care they be not too violent, for some Persons by this means have lost their Sight.

C H A P. XLIV.

Of the Extirpation of Scrophulous Tumours.

THIS Operation is the Excision or Consuming of Scrophulous Glands.

THE CAUSE. When the Glands of the Neck are large or tumefied, they are said to be Scrophulous. This Indisposition arises from an acid *Lympha* which obstructs the Glands, and coagulates the Matter contained in them. A sedentary unactive Life, is often the occasion of Scrophulous Tumours; for the Motion of the Blood being very slow, and not driving the Matter through the Part, it stagnates and breeds these Strumous Swellings, and for the same Reason, a thick, foggy Air, External Cold, and all Viscous Mears have the same effect. Waters which flow down from the Mountains, are apt to breed these Distempers, because their Chillness very much abates the rapid Motion of the Blood and thickens the *Lympha*.

Strumæ which are of a Cancerous Nature are very difficultly cured, especially if they are of long standing, by reason there

is a great proportion of an Acid in them; but such as are soft and pendulous, are not altogether so obstinate at first.

The *Bronchocele* must not be confounded with Scrophulous Swellings, for this is peculiar to the Neck and Throat, and is of a prodigious size sometimes hanging down like a sack, and if you compress it, you may perceive the *Lympha* fluctuate. These Swellings are contained in a *Cystis*, in which the *Lympha* is congealed, and becomes of a consistence like Plaster. This Distemper creates a Difficulty of swallowing; the Senses of Hearing, Tasting, and Smelling are impaired, which possibly may be caused by Tumours compressing the Nerves, and hindring the Circulation of the Spirits, or perhaps from abundance of superfluous Moisture, which makes an inundation on the Tongue, Nose and Auditory passage, and disables them from duely discerning the qualities of the Objects presented to them.

THE SIGNS. Strumous Tumours are evident enough of themselves. In feeling the Neck one may perceive several hard and unequal swellings, which are only tumefied Glands. These swellings are sometimes very numerous and extend to the shoulders, and when this is so, they are not inflamed at all.

Strumæ in the Neck sometimes appear outwardly and are pendulous, at other times they are implicated in the Neighbouring parts, hinder Respiration, and compress the *Larynx*. The true *Strumæ* are Hard, White and Indolent, and those which are Livid and Painful are Spurious.

THE OPERATION.

When the *Strumæ* are pendulous tie them with a Thread with a slip knot, that so you may straiten the Ligature every day by little and little, and so the Tumour being deprived of its Nourishment, may wither and fall away.

If the *Strumæ* are not Pendulous this way cannot be practised; and therefore in cases of this Nature, an Incision must be made through the Skin to lay the Gland bare, and then you must extirpate it together with the *Cystis* in which it is contained, and in doing this, you must be careful to dissect the part, and to separate the *Cystis* from the contiguous Bodies, without hurting the Nerves or Blood-Vessels.

THE DRESSING. Put Dossils and Pledgits armed with good Digestives into the Wound to procure a good Suppuration

on of the *Lympha* congested there, and then Deterge and Cicatrize it. The Dressings must be kept on the part with a Handkerchief folded Triangularwise.

THE CURE. When you do not intend to proceed to the Extirpation of a Strumous Tumour, you must endeavour to soften and resolve it by the most potent Discutients; for instance, *Ammoniacum*, and the rest of the Gumms dissolved in *Vinegar*, reduced to the consistence of an Emplaster, and so applied to the part, or you may foment it with a sponge soaked in *Lime-Water*. Cataplasms of the Leaves and Roots of wild *Cowcumber*s beat up with *Goats Dung*, is an excellent Remedy.

Running *Mercury* applied to the Part affected, is a potent Discutient, but before it can be applied, it must be made into a Liniment with some Greases, *Turpentine*, or some of the Gumms. Or R. *Unguent. Martiatum* ℥i. Oyl of *Myrtles* and *Bays* ā. ʒ℥. crude *Quick-silver* killed with Flower of *Brimstone* ʒij. Mix these and make an Unguent. All Mercurial Medicines are apt to raise a Salivation, and therefore when you use them, you must frequently inspect the Patients Mouth to see if the Tongue, Tonsils, Gumms, or any other part begin to swell; for if so, it is a sign that a Salivation is ready to rise, and then it is high time to remove all the Applications, and purge with *Hydragogues*. The same Method is to be taken if it be already begun, and you judge it convenient to prevent it, for often times a Salivation is of very great service in *Scrophulous Distempers*.

You must never open Strumous Tumours till the Matter or *Lympha* whence they arise is converted into a *Pus*. And if none of the preceding Remedies soften or dissipate them, you may try to bring them to suppuration, by an Emplaster of *Melilot* malaxed with Oyl of *sweet Almonds* and *Serpents Fat*, or a Cataplasm of the Roots of *Marsh-mallows*, *White Lilies*, *Hemlock*, and *Wild Cowcumber*s, with Oyl of *Lizards*.

You must not open the Tumour as soon as the Suppuration is completed, but leave the Abscess for some time, for the better rotting and wasting the vitiated Glands. For the consuming what remains after the opening of the Abscess, put into the Wound a Digestive compos'd of *Turpentine*, the Yelks of Eggs and Honey, which will be better still if a little *Præcipitate* be mixed with it. In the last place, deterge and heal the Wound with *Balsam of Sulphur*.

In the mean time you must not forget internal Medicines. This Powder is very good, *R. Sea Spunge burnt ʒiij. Os Sepiæ, Faws of a Pike, Crabs Eyes, long Pepper, White Ginger, Galls, Sea Shells burnt, Egg-shells, a. ʒi.* Mix the Ingredients, and let the Patient take of this Powder ʒß once every day; let him likewise use a Ptisan made of the Roots of *Figg-wort, Filipendula, Leaves of Butchers Broom, and Broom* for his ordinary Drink. Powder of Humane Skulls taken in any liquid Vehicle, is a specifick in Strumous Swellings of the Neck. But observe that the Skull must neither have been buried nor rotten, because then it has lost all its volatile Salts.

REMARKS.

Kerkringius Obs. 74: tells us, that a certain Nun was very much incommoded by a *Bronchocele*, which took up all the fore-part of her Throat, and after three Months space it grew so large, that it choaked her.

CHAP. XLV.

Of Warts, Wens, Horney and Fungous Excrecences.

THIS Operation is an *Amputation, Erofion or Discuffing* of Excrefcences.

THE CAUSE. When the small Nervous Filaments (by the *Refe* of which the Skin is formed) corroded thro', or by any Accident divided the Nutritious Juyce which diffills from their extremities is congested, and being coagulated by the external Cold or some Acids, forms Warts. If these Warts are on the Toes, and the Shoe presses the Part, being compacted together they become of a Carnous Substance, and are rooted in the Tendons, and springing from them like *Ganglions*. When these Excrefcences thrust very far out and hard, they are termed Horns, and most commonly proceed from Bones, seeming to be only a prolongation of them.

Sometimes a soft Tumour rises on the Joynts which increases insensibly. When this has pierced the Skin, it grows

to a prodigious size in a very small time, and is called a Wen. This Fleſhy, Soft, Pale and Indolent Subſtance, is formed by the Dilatation or Laceration of the ſame Membrane, Tendon, or other Nervous part, which happens to be hurt by ſome Fall, Contuſion, Luxation or Strain. This is almoſt always on the Joynt, and adheres to ſome Membranes or Tendons. It proceeds from a Mixture of the Nutritious Juyce, and the Mucilage of the Joynts, and by means of the Acids in it, acquires a Cancerous Malignity. Theſe *Fungus's* ſometimes grow on the Membranes of the Brain.

THE SIGNS. Theſe Tumours are viſible of themſelves, Warts are ſmall uneven Tumours, rough like Shagreen; theſe grow deep into the Skin, ſome have a large Baſis and ſharpen to a point in a Pyramidal Figure. Theſe little indurated Bodies which grow on the Feet are harder than Warts, and reſemble a Horn being Transparent. Theſe differ from Corns in no other reſpect, but that they are larger. *Fungus's* are ſoft, ſpongy, whitish, and grow ſuddenly, they are almoſt without ſenſe, and moſt commonly ariſe about the Joynts, and on the Membranes of the Brain.

Warts are not in any manner dangerous, except when they proceed from ſome Venereal Acid. Theſe ſmall Tumours are ſometimes cured by ſlipping them off, if they do not enter the Skin very deep. Warts which are uneven and like Shagreen, are very apt to return after they are cut off, becauſe moſt commonly they are rooted in the Tendon. Pocky Warts are more difficult to cure than any other. Wens continue ſometimes for ſeveral years.

The OPERATION.

Warts muſt be cut off even with the Skin, and rubbed well with *Oyl of Tartar per deliquium*. Some burn them with a Needle made red hot in the Flame of a Candle: But the better way is to make a Ligature to intercept the Nutritious Juyce, for then they ſoon dry and fall off.

As for Corns, the beſt way is to cut them to the Root, and when they grow again, as they will not fail to do, cut them a new. They muſt likewiſe be cut before Cauſticks are applied to eat out the Roots, except they grow upon a Tendon, and in this caſe you muſt forbear for fear of an Inflammation or Gangrene of the Part.

Fungus's

Fungus's and *Wenns* may be taken off together with their Root if it appear, but if it do's not, you may consume them with gentle *Causticks*; for if they were too strong, the *Fungus* would be apt to degenerate into a *Cancer*. Or if you would take it off without *Excision*, you may make a *Ligature* about it, tying it every day straiter to intercept the Nourishment which feeds it, and then apply *Desiccative Powders* to stop the Orifice.

THE DRESSING is the same used in the applying other *Causticks*.

THE CURE. These Tumours require both internal and external Medicines, to prevent the Efflux and Concretion of the Nutritious Juyce. The means to obtain this, is by blunting the Points of the Acids by Alcalies and Sudorificks, as *Diaphoretick Antimony* from ℥i. to 3℥ . Powder and Salt of *Vipers* in like Dose taken in a Glafs of *Carduus Water*. *Pri-fans* made of the Sudorifick Roots are excellent. Purging with Hydragogues is very useful to carry off the Acid Serosities. Of this kind, are *Falap* and *Scammony*, or their *Resins* taken from eight to fifteen Grains in *Conserve of Roses*, or any Liquid Vehicle.

The principal external Medicines which are good against Warts, are the fresh Juyce of *Celandine*, which must be applied and continued on for some time, having first made a Superficial Incision, that so the Juyce may penetrate the better. A Solution of *Sal Armoniack*, or a Liniment of *Honey* with a little *Vitriol*, or a drop or two of flaming *Brimstone* from a Pins Head, or *Sal Armoniack* dissolved in *Vinegar* is good to cure Corns if the Corn be first cut. for otherwise its thickness would be apt to hinder the Medicine from reaching deep enough.

Aqua-fortis and Butter of *Antimony* may be dropt from the point of a Pin, and repeated frequently, ceasing if any Inflammation arise. If Corns take Root in the Tendons, you must not corrode them to the Bottom for fear of any Inflammation or Ulcer which may ensue.

R E M A R K S.

Fab. Hildanus, Cent. 6. Obs. 81. relates, That a certain young Lady had a prodigious Wart between the first and second Bones of the *Metacarpus* of the Right Hand, which was a great Blemish, but he cured her in this manner; first he purged the Patient, and after this he made a *Ligature* on

on the swelling with a Thread dipt in Arsenical Water, this he continued to tie straiter and straiter from time to time, till the Warts fell off, and then deterged the Wound with *Unguent. Apostolorum* and healed it, there remaining scarce any *Cicatrix* at all. But he advises the young Surgeons not to be too forward to imitate his Practice in this particular, for fear of bad Accidents happening from the use of Arsenick, as did in this young Lady, to remedy which he purged her, bled her, laid on Defensatives, and gave her Cordials.

CHAP. XLVI.

Of taking out Cystis's or Baggs.

THIS Operation is the *Extirpating Cystis's, together with the Matter contained in them.*

THE CAUSE. *Cystis's* are formed out of Membranes torn from the adjacent parts and distended, which like a Bag receive the Nutricious Juyce transuding through the part.

THE SIGNS which demonstrate the existence of a *Cystis* filled with a Gypseous or Steatomatous Matter, are principally the situation about the Head and Neck.

These Swellings are without the least Danger, but are very inconvenient.

THE OPERATION.

If the Swelling be large, and have a broad *Basis*, make a Crucial Incision on the Skin, and free the Bag from its adherences to the Neighbouring parts, either by the haft of the Knife, or dissect it with the point, and take it out whole with the Matter contained in it.

Some Practitioners open these Bags with Causticks, and after Digestion consume the rest with another Caustick; but Extirpation is better if the Patient will submit to it.

If these Tumours have a slender *Basis*, you may take them off with a Ligature, or cut them off when they are dry and withered.

THE

THE DRESSING. For the consuming the remainder of the Bag in Suppuration, put into the Wound Dossils and Pledgits arm'd with good Digestives, such as *Turpentine* and the *Yelks of Eggs*, then cover it with an Emplaster, and keep all on with a convenient Bandage.

If part of the Bag remain in the Swelling, consume it with Causticks, and if there be an Hæmorrhage, stop the Flux with Powders or Stryptick Waters.

THE CURE consists in continuing to digest the Swelling, till the remaining Bag be consumed, and there be a laudable Suppuration, and then Deterging and Cicatrizing; during which purge the Patient, and then give him Sudorificks.

Ganglions on Tendons and other Membranous parts, if recent, are cured by rubbing them strongly with the Thumb, and so making a strait Bandage on them. But if they are of any long standing, you must apply Discutients on them with a Plate of Lead, and bind this on with a Filler, leaving the Dressings on the Part till the Swelling be dissipated.

R E M A R K S.

Fab. Hildanus. Cent. 3. Obs. 85. relates the case of a young Fellow of twenty years of Age, who had the *Scrophulæ* in his Neck in so monstrous a manner, that they encompassed it, and filled up the Cavity under the Chin, extending themselves under the Skin down to the *Sternum*, and under the Ear to the *Lambdoidal Suture*. They were Hard, Livid, Unequal, and the Veins filled with black Blood. In fine, the Patient was choaked by the encrease of this Swelling.

C H A P. XLVII.

Of cutting out the Toe Nails when enter the Flesh.

THIS Operation is an *Amputation of part of the Toe Nail which enters the Flesh.*

THE CAUSE. This inconvenience proceeds from a want of care in cutting the Nail, which being prest by the Shoe, is bent in, and thrust into the Flesh.

THE SIGNS. The Flesh growing over the Nail is visible, there is a great Pain and Inflammation of the Toe, which sometimes is so great, that it kindles a Fever.

The O P E R A T I O N.

Let the Foot soak for some time in warm Water to soften the Nail; then let the Surgeon place the Patient in a Chair, which is something higher than his own, and laying the Patients Foot on his Knee, pare away the Nail on the side. If there be a space between the Nail and the Toe, let him pass the point of his Scissars under the Nail to cut it off; but if the Nail have taken too deep root into the Flesh, it must be gently separated and taken off with a Knife, and not torn away by violence.

THE DRESSING. Wrap the Toe in a Desiccative Emplaster, as *de Minio*, and keep that on with a narrow Fillet, and if there be a Flux of Blood stop it with some Styrack Water or Powder.

THE CURE. If an Inflammation or other Accident follow, apply Discutients, as *Spirit of Wine Camphorated*, or the like.

R E M A R K S.

There are many instances of continual Fevers, Convulsions and *Deliriums*, upon the Nail entring into the Flesh.

C H A P. XLVIII.

Of perforating the Cornea.

THIS Operation is a *small Incision made in the Cornea, to let out the Pus.*

THE CAUSE. The *Pus* proceeds from Blood extravasated by some Blow, Inflammation, Obstruction or Rupture of a Capillary Vessel.

THE SIGNS which demonstrate there is *Pus* under the *Cornea* are a small Tumour, Pain, and Discoloration of the Part.

The O P E R A T I O N :

Let the Artist place the Patient in a Situation fit for the Operation, let him depress the Eye with a *Speculum Oculi*, and make an Incision with a Lancet on the Tumour at the bottom of the *Cornea*, and compress the Eye to squeeze out the *Pus*. Some would have the Surgeon suck it out through a Pipe, when it is too thick to come out by any other means. This Pipe must be made large in the middle, that so the *Pus* may lodge in the dilated part, and not reach the Mouth; but this Suction is hazardous, because there is a great danger of drawing out the Aqueous Humour of the Eye, which is one of the Organs of Vision, tho' this Humour indeed may be reproduced.

THE DRESSING consists in applying some mild Suppurative, which is not in the least corrosive, such as is for instance *Pigeons Blood*. If there be any Inflammation when the Eye is shut, lay a small round Compress dipt in *Rose Water* on it, and keep it on with a Handkerchief folded Triangularwise, as in the *Fistula Lacrimalis*.

THE CURE. Let the Dressings be taken off twice a day, and continue to digest the Wound as long as you judge requisite, and if the Inflammation continues, let the Patient bleed, use Clysters, and let his Food be Broths and the Yolks of Eggs.

R E M A R K S.

Fab. Hildanus, Cent. 3. Obs. 23. relates, that a Girl of six

fix years of Age having long had a Defluxion on the Eye ; after having tryed a great many Medicines in vain, at last was cured by a Seton in the Neck of the Defluxion, and the spot vanished of its own accord.

Fab. Hildanus, Cent. 1. Obs. 26. tells us, that a Shoemakers Son of about 15 years of Age, received a blow on the Eye near the *Iris*, upon which the Aqueous Humour came away instantly, and the young Man lost his Sight. He being called to him instantly, applied the *White of an Egg* beaten up with a little *Rose Water* and *Saffron* ; and then applied a Defensative Emplaster on the Forehead, made of *Bole Armoniack* and *Terra Sigillata* with *Oyl of Roses*, and a little *Wax* and *Vinegar*, after which he gave the Patient a Clyster. The next Day he gave him a Purge, and for seven or eight days together dressed the Wound with *Anodines*, after which he made a *Collyrium* with *Eye-bright Water*, *Sugar* and *Tutty prepared*, which he laid on the *Cicatrix*, and the Patient was cured and recovered the use of his Sight.

This Remark demonstrates, that the Aqueous Humour may be reproduced in the Eye after it is lost. This Experiment is easie to be made in Birds, in which it succeeds in a very small time. Mr. *Nuck* late Professor of Anatomy in the University of *Leyden*, discovered a Channel creeping over the *Sclerotis*, and inserted into the *Cornea*, which servesto convey the Aqueous Humour into the Eye. This he first observed in dissecting the Eye of a *Dog-Fish* or *Galea*, &c. and the Channel was large enough to receive his Probe. When he drew out the Probe the Aqueous Humour did not run out, by reason there was a Valve at the end of the Duct.

This Accidental Discovery caused that Gentleman to make a more exact scrutiny in a Sheeps Eye, and there he found five Channels in one, and six in another, which ran over the *Sclerotis*, and piercing the *Cornea* terminated in it. He thrust a Hogs Bristle into each Channel, which appeared of a black Colour. He found likewise two Channels in each Eye of Dogs, one under the Abducent, and the other under the Adducent Muscles. If you desire to observe these in the Eye of a Living Dog, you must lift up the upper Eye-lid, and then you will see the place where the common Duct pierces the *Cornea*. These Channels most commonly proceed streight forward on the *Conjunctiva*, but sometimes they turn aside, and piercing the *Sclerotis*, discharge their contents into the bottom of the Eye.

Fernelius in his Pathology, Chap. 5. l. 5. treating of Suffusions, tells us he had seen one formed in one days time.

C H A P. XLIX.

Of the Ungula's in the greater Angles of the Eyes.

THIS Operation is the Extirpation of a small Membrane called Ungula, by reason of its hardness and Figure.

THE CAUSE of this Distemper is a thick Excrecence, which extending it self over the *Conjunctiva*, and sometimes over the Pupil hinders Vision.

THE SIGNS. This Distemper is visible of it self, there is a thick Membrane which takes its Rise from the great Angle, and extends it self over the whole Globe of the Eye.

The OPERATION.

If this Membrane covers the Globe of the Eye, and is not fixed to the greater Angle, lift it up and cut it off with the Scissars as near as possible to its rise. For the raising it up pass a blunt Needle threaded under it, and with the Thread raise it up, and cut it off as near the Incision as may be.

When the Membrane adheres to the *Cornea*, some Practitioners pass a Needle threaded with a Horse-hair under the *Cornea*, and bring this forward and backward to separate it; but I disapprove of this Practice, because it must necessarily cause great Pain and Inflammation, and for this reason I should rather chuse to make a Ligature on the Membrane near the greater Angle of the Eye to intercept its Nourishment, and consume the Membrane which covers the *Cornea* with Suppuratives, or by passing gently the Lunar Caustick frequently over it. This Caustick has this Advantage over all others, that it consumes this Excrecence without leaving any thing in the Eye, which may irritate it,

it, and there is no danger of hurting the *Cornea*, because you are constantly Master of your Caustick.

THE DRESSING consists in putting into the Eye Pledgits dipt in *Rose* and *Plantane Water*, or other Defensatives to prevent the Inflammation, and keeping them on with the Bandage used in the *Fistula Lachrymalis*.

THE CURE consists in Bleeding, Clysters, and a regular Diet, if there be any Inflammation.

R E M A R K S.

Fab. Hildanus, Cent. 1. Obs. 2. relates, that a Man of 40 years of Age had a Schirrous Tumour about the bigness of a Chesnut, in the greater Angle of the Eye. This Swelling was livid, and full of several small Veins, adhering on one side to the *Conjunctiva* quite to the *Iris*, and on the other side to the upper Eye-lid, and the Lachrymal Gland in such manner, that it covered the whole Globe of the Eye when the Patient stirred it.

C H A P. L.

Of Extirpating a Cancer of the Eye.

THIS Operation is an Extirpation of a Cancer in the Orbit.

THE CAUSE is the same with that of the Breast, which is amply described in its proper place.

THE SIGNS are almost the same, there is a clear, sharp, Gleet runs from the Eye. The Eye it self is red and Inflamed, there are small Ulcers in the *Cornea*, and on the Pupil which create extreme Pain, and the Vessels which creep over the Globe of the Eye are swoln and varicose, the Patient feels an intolerable pain in his Head, and the Lustre of his Countenance is lost, and looks of a leaden hue. These Cancers sometimes become Fistulous.

While the Tumour of the Eye is only a *Ficus*, the Eyes are dull and livid, and the Vessels are neither swoln nor varicose, but sometimes these Tumours degenerate into Cancers.

The OPERATION.

This is an Extirpating the whole Globe of the Eye, which cannot be done without separating it round from its adherences, and so taking it out of its Orbit.

THE DRESSING. Fill the Orbit with Doffils arm'd with some good Digestives, to consume the remaining part of the *Cancer*, and carry it off by Suppuration, then lay on this a Pledgit arm'd with some good Digestive, and cover it with a Compress, keeping all on with a Handkerchief or the Bandage used in the *Fistula Lachrymalis*.

THE CURE. Remove the Dressings twice a Day, and renew as often your Digestive Applications, and continue to suppurate the Wound till the *Pus* be laudable, and there be no appearance of a *Cancer*, then Deterge and Cicatrize it. Let the Patients Diet be sweet, and let him avoid all *Haut-gousts*, all *Pulse*, let his Sleep be moderate, banishing all vehement Passions, and let him keep his Body open.

REMARKS.

Some years since there was a certain Man in the *Hôtel Dieu* at *Paris*, who had his Eyes struck out by a Blow which he received, the Globe of the Eye being without the Orbit, adhered and grew to the Cheek, and the Optick Nerve was elongated, notwithstanding which he could discern any object presented to him.

Bartholin. Cent. 1. Hist. 7. tells us, That an Occult *Cancer* happening in the right Breast of a Lady, she applied a plate of Lead rubbed with *Quick-silver* once in two Days on it. Notwithstanding which the *Cancer* encreased and ulcerated, which obliged the Surgeon to remove the Plate of Lead, and then the Pains ceased, but after some time they encreased, and *Cancer* voided Mercury every day in dressing it, nay the Mercury transuded through the very Skin it self on the Shoulder Blade, and our Author laid on a Plate of Gold to extract the *Quick-silver*.

C H A P. LI.

Of the Coalition of the Eye-lids.

THIS Operation is the Separation of the Eye-lids, when they grow together.

THE CAUSE. This Distemper arises from several small Ulcers on the edge of the Eye-lids, which are united in the same manner as the Lips of Wounds, when they touch each other.

THE SIGNS. This Defect is visible the Eyes are shut, and the Patient cannot open the Eye-lids.

The OPERATION.

Pass a blunt Needle under the Eye-lids and hold them up, and keeping the Thread at both ends, then separate them with a Lancet. If the Eye-lids adhere to the Globe of the Eye, separate them dextrously without engaging the Globe of the Eye, for it is much better to touch the Lid than that.

If the Eye-lids adhere to the Globe of the Eye, it will be difficult to separate them.

THE DRESSING consists in laying some Pledgits dipt in Defensative Liquors, and keeping them on with the Handkerchief folded Triangularwise.

THE CURE. You must have recourse to Bleeding, Purging and Clysters, putting Lint dipt in *Plantane* or *Rose-Water* between the Eye-lids, to hinder them from growing together.

R E M A R K S.

Fabr. Hildanus, Cent. 5. Obs. 10. relates that a certain Man hapning to receive a Wound on the Eye, the upper Eye-lid grew to the Globe of the Eye, and the Physicians tryed several ways to free it, till at last he was called in, who treated him in this manner. In the first place he prescribed him a regular Diet, purged him and bled him in the Arm. Then he put a small piece of Silk at the end of a crooked Probe, and passed it under the Eye-lid, beginning

at the lesser Angle of the Eye. Next he drew the crooked Probe from the Eye-lid, and left the Thread under it, with one end hanging out of the lesser, and the other out of the greater Angle of the Eye, and tyed both ends of the Silk together, fastning a piece of Lead to it of a Dram in Weight, which Lead he could slide all along the Silk from one end to another, upon every different Motion of the Patient; and this piece of Lead he took away in the Night-time, binding the Patients Eye up gently, and dropping the following *Collyrium* into the greater Angle of the Patients Eye three or four times in a Day. *R. Rose, Plantane, and Eye-bright Waters, a. ʒss. Tutty prepared, washed Ceruse, Burnt Hartshorn, a. ʒi.* Mix these in a Mortar, and add to this thick Mucilage *Quince-seeds*, enough to give it the consistence of a Liniment.

By means of this Lead the Eye-lid was separated from the Ball of the Eye in 8 or 9 days; and because the *Cicatrix* did a little blemish and impair the Sight, he made several inunctions of the Eye-lids and Forehead with *Oyl of Worms*, and laid on the Eyes a Bag with *Betony, Eye-bright, Primroses, Camomile Roses* and *Rosemary* steeped in Water, and applied hot to the Part, with which the Patient was perfectly cured.

C H A P. LII.

Of drawing out Hairs when they stick in the Eyes.

THIS is the *pulling out Hairs which stick in the Eyes.*

THE CAUSE. The entring of the Hairs into the Eyes, proceeds from the ill Disposition and Tortuosity of the Pores which causes them to grow awry; Nay, sometimes it proceeds from several ranges of Hairs which thrust each other out.

THE SIGNS. This is very visible, and the Hairs pricking the Eyes, cause a great Pain and Inflammation.

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The OPERATION.

Turn up the Eye-lids and pull out those Hairs with a *Forceps*, but observe never to cut them, for being short they will be stiff and prick the Eyes like so many Needles.

THE DRESSING consists in laying on some small Pledgits dipt in some Defensative Liquors, to put a stop to the Inflammation, which may be caused by the Pain of the Operation, and keeping them on with a Handkerchief folded Triangularwise.

REMARKS.

Fab. Hildanus, Cent. 1. Obs. 27. tells us, a certain Man having for a long time used himself to wash his Eyes every Morning with cold Water, his Sight by degrees decayed, and he saw all Objects very confusedly, and this at last ended in an Ophthalmy.

In the same Century, *Obs. 24.* He tells us that a Boy of fourteen years of Age of a Phlegmarick Body, laid a Wager that he could sneeze a Hundred times, upon which he put something up his Nose, and by irritating and tickling the Membrane of the Nose he did it; but he was presently seized with a violent pain in his Head, his Sight began to decay, and the next Morning he lost it quite, without any Inflammation or Fever. This Disease was at last cured by a Seton in the Neck, and Cupping-glasses applied to the Shoulders.

Bartholin in his 84th History tells us, that the People of *Alexandria* and *Aegypt* are very apt to have two or three rows of Hairs on the Eye-lids, which prick the *Cornea* when they shut them, and from hence Inflammations and Pains of the Eyes are very frequent in that Country, and he tells us the only way to free them from this Inconvenience, is to cauterize the Part with a red hot Iron to make it callous, and prevent the Hairs from returning again.

CHAP.

C H A P. LIII.

Of Drawing Teeth.

THIS Operation is *the drawing of a Tooth out of its Socket.*

THE CAUSE. The Pain of the Teeth proceeds from a sharp Humour which irritates the Membrane that lines their *Alveoli* or Sockets. The Teeth are sometimes rotted, or have their Surface corroded by the sharpness of the *Saliva*, or the Meat lodged in their Interstices. Sometimes they are corroded by Sweet-meats. When any one eats hot Things, and presently eats something very cold after, the Teeth grow black and carious; because these putting the parts of the Teeth into various Motions, separate them, and destroy their continuity; and there being several Intervals between their parts, they must of necessity absorb some parts of the Light, and from hence it is not difficult to account for their blackness according to the Cartesian Hypothesis of the cause of Colours.

THE SIGNS. Sometimes there is a small, round, black, hole, which by degrees encreases and grows larger, and the Teeth become black and stinking. Pains in the Teeth are often accompanied with a great pain in the Head, loss of Appetite, want of Sleep, and Convulsions.

The Teeth are small, longish Bones, smooth and hard, which are stuck in their Sockets, as a Nail in a piece of Wood. This sort of Articulation as I remarked before, is called *Gomphosis*. They begin to appear in young Children, about the seventh or eighth Month. The *Incisores* or Fore-teeth of the upper Jaw appear first, and then those of the lower Jaw; the Dog-teeth come next forth, and the Grinders last of all. When the Teeth first come out they tear the Gums and the *Periosteum*, which lines the Socket, which creates so great Pain, that People usually do account a Childs Life very dubious, till the Teeth are come forth, and indeed with very good reason, since there are so many Accidents attend the breeding of them, as Pains, Convulsions, Fevers, Epilepsies, Vomiting, Loosnesses, &c.

I conjecture Teeth are formed in this manner. The Membrane which invests the Teeth being a Texture of an Infini-

Infinity of small Vessels, spues out glutinous Matter which forms a sort of *Stratum*, and by congection of more of these *Strata* on one another, which in time fill up and rise beyond the Cavity of the *Alveoli*, the Teeth are formed, whose external part being prest in the Mastication of the Mear, form a Cortical part harder than the internal. The same Vessels entring the *Basis* of the Teeth, supply them with Nourishment.

The Teeth are commonly divided into *Incisores* or Fore-teeth, *Canini* or Dog-teeth, and *Molares* or Grinders. There are most commonly 32 Teeth in both Jaws, *viz.* Sixteen in the upper Jaw, and sixteen in the lower, or four Fore-teeth, two Dog-teeth, and ten Grinders in each Jaw. The *Incisores* or Fore-teeth are a little flat and sharp, something Convex without and hollow within, having never more than one Root. The Grinders are large and unequal, and have their *Basis* irregular, for the better grinding and comminution of the Aliment. These have some one, some two, and others three Roots, and in above two thousand Teeth which I have viewed, I never found one that had more than three Roots distinct from each other.

THE OPERATION.

When the Teeth are carious and rotten, the best way is to pull them out to be delivered from the continual Pain and stinking Breath, and prevent them from corrupting their Neighbours.

There are several Instruments used on this occasion, as the Polican to pull out large Teeth which are far in the Mouth. The Paces, when they are not so far, and the Punch, when the Teeth are broken off close to the Gum, and there is no hold.

But whatsoever the Instrument be with which you perform the Operation, place the Patient on a Cushion on the Floor, or on a low Seat, and let the Artist stand behind him, and opening his Mouth as wide as he can, if it be one of the hinder Teeth let him use the Polican, one end of which must rest on the Foreteeth, having wrapt it in a Cloth for fear of breaking those Teeth, and then having hooked the moveable branch of the Instrument, let him pull it strongly, and so bring out the Tooth; but in doing this he must take care of the sound Teeth, for by resting too much on them, he may chance to break them.

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Great care must be taken that the Artift do not mistake a found Tooth for an unsound one; and in this case he must not always rely on the Patients account, for it often happens that the contiguous Teeth being painful, he points to one of them; and therefore in this case the surest way is to take that which is black and rotten.

If the Tooth be not too far within the Mouth, the Artift may make use of the Paces. If the Tooth which is to be drawn be in the upper Jaw, the handle of the Instrument must be turned down, and you must take hold of the Tooth as close to the Gum as may be, having first separated the Gum with a Fleam, for the better doing this. In drawing the Tooth out, there are three Motions at once, *viz.* turning it to the right and left, and pulling it out of the Socket.

When a Tooth is broken off near the Socket, the Punch is to be made use of. For this purpose separate the Gum from the Tooth as far as is possible, and apply the two Teeth of the Punch as low as may be, and push it strongly outward.

THE DRESSING. Some times there is so large a Flux of Blood after the pulling out of a Tooth, that it is difficult to stop it. For this purpose make a huge Tent of Lint as big as an Egg, and dipping it in the Stryptick Water, put it into the Socket of the Tooth which is drawn out, and let the Patient press it with his Jaw, and when he cannot compress it himself, its magnitude will be pressure enough. If there be any great loss of Blood, let the Patient gargle his Mouth with *Oxycrate*.

THE CURE. When the Teeth are not carious, they must not be pulled out, though perhaps they put the Patient to a great deal of Pain. In this case let him take *Spirie of Wine Camphorated* into his Mouth, and lie in such a Posture, that the Liquor may touch the Tooth which is affected. Since Pains in the Teeth most commonly proceed from an Acrimony of the *Lympha*, whose Fomes is in the Stomach, let the Patient take 7 or 8 grains of *Emetick Tartar* in Broth, for it is found by experience that Vomiting has often cured pains in the Teeth.

Sometimes the Fluxion is very successfully diverted by bleeding in the opposite Arm. Detergent and Emollient Clysters are very useful, and so are Anodyne Cataplasms made with Crumbs of *White bread*, *Yelks of Eggs*, *Saffron* and *Camphire* applied to the Patients Cheek to abate the Pain. *Laudanum* applied to the Temporal Artery, or a little

the Lint dipt in a Solution of it, made in Water or Milk, and put into the Ear or Mouth, is an excellent Remedy. To hinder the progress of the Cariosity of a Tooth, put Oyl of Guajacum into it.

R E M A R K S:

An Extract of a Letter concerning the Teeth of divers Animals, Printed at Paris some years since.

The Structure of the Teeth in most Animals, shews us their Inclinations, and the Diet on which they feed.

Some Animals have their Incisive Teeth long and sharp, their Dog-teeth long and crooked, and their Grinders unequal and pointed, as Bears, Boars, Lyons, Wolves, Tygers, Squirrels, Cats, Dogs, &c. all which are Carnivorous Animals, and live upon rapine. Their Grinders serve for the Mastication and the Communion of their Prey, the incisive Teeth to cut it, and the Dog-teeth to retain it in the Mouth and tear it. All these Animals have at least three fourths of their Teeth within the Jaw, which makes them much stronger than if a greater part of the Teeth were out.

Those Animals which live on Herbage, as Oxen and Sheep have no *Incisores*, but have flat, round Teeth in their lower Jaw, and do rather pull up than cut the Grass which they eat, and the most part of these Animals chew the Cud. River Fowls, as Geese, Ducks, Herns, Swans, have a long Bill which is round and flat at the end, and have a soft Flexible Membrane in their lower Jaw, which helps them to swallow their Meat with ease. The sides of their Bill are like so many small Saws, with which they take up little Fish, and pluck Weeds.

Birds which have a hard, crooked, strong, Bill, with sharp edges easily tear and cut Flesh, and for that reason are Carnivorous, and such for the most part are Birds of Prey, as the Eagle, Hawk, Raven, &c.

Birds which have their Bill strait, slender, with a Channel in it, as the Linnet, Goldfinch, and Sparrow, most commonly feed on Seeds. The end of their Bill is cut sharp, and they make use of it to break the Seeds, and cut Blades of Grass.

Those Birds which have the edges of their Bill indented, as the greatest part of River Fowl have, feed for the most part upon Weeds, and these Indentations serve as a saw with which

which they cut them, and pull them up, as Geese, Ducks, Swans. River Fowl which only live on Fishing, have most commonly in their Bill a little set of Teeth, by the help of which they keep the Fish which they catch in their Mouths. These small points are very large in the Birds called *Fiber*, which has Teeth all along his Bill, which are long pointed, and turned in towards the Throat.

Fish which have little pointed Teeth, only live upon other little Fish which they catch, and these Teeth which point toward the Throat, serve not so much to Masticate, as to retain the Fish which they have in their Mouths. Those Fish which have their Tongue and the Palate of their Mouth paved and scaly, only live on Shell-fish, and break the Shell to eat the Meat contained in it. Tortoises which live in Water, have Teeth quite down to the Throat, and use them for the Communion of those Plants which grow at the bottom of the Sea which they feed on. Land Tortoises have not only Teeth in their Jaws, and on their Tongue, which are not directly opposite, but enter one between the other, serve only for the retention, and not for the Communion of the Aliments; and *Steno* in his Discourse *de Cane Carcharia* informs us, that Fish has six hundred Teeth, and has some still come forth as long as he lives. This Fish has several ranges of Teeth in each Jaw, which are hard, sharp, and pointed, the greatest part of which are an Inch in length, and serve only for the Retention, and not for the Communion of its Food, which is evident, since very large Animals are often found entire in its Stomach.

Animals whose Tongues are set with large pointed *Papillæ*, and have these turned toward the Throat, make use of them in swallowing their Meat, and they serve to hinder it from falling out of their Mouth; of this kind are Lions, Tygers, Leopards, Panthers, &c. and then cover the whole Surface of the Tongue. Some large Fishes have their Tongue covered with Bristles which form a sort of Brush, and serve to retain the Food.

The Sea-Fox has his Tongue covered with small pieces of Bone, which are not bigger than the points of Needles, and these are white, square, and very hard.

The Cod-fish has Teeth at the bottom of his Throat, whose points turn inwards, and it is probable they only serve to retain the Aliment. These Teeth are hard pointed, close, and make a sort of File, and there are four of them, *viz.* two above and two below, which answer to each other.

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The *Raia* has three or four ranks of hard, smooth, transparent Bones cut Lozangewise, and ranged in very good order, and these Bones are the Teeth with which they Masticate their Meat. The Carp has grinders which serve for the Communion of his Meat, he has six in the upper Jaw, ranged three and three together; and in the lower Jaw this Fish has a Cartilaginous Bone in the shape of a flat Olive, which does the office of Teeth. In the Seas of *Canada* there is a Fish which has both the Jaws flat, which serves for the grinding of the Meat. These have flat Teeth close against each other, and very hard, and with his Teeth he cracks the Shell first, and then feeds on the Fish. The Fish called *La Vielle*, has flat Teeth quite to the farther end of his Throat, which seems to be paved with them. The Fish called the *Requiem* has its Teeth an Inch, large, flat, and Triangular, with small Indentations on the side. There are three ranks in each Jaw, and this Animal is so strong, and his Teeth so sharp, that he can bite off the Thigh of a Man at once.

The *Viper* has two great moveable teeth in his upper Jaw, as well as the Sea-Frog. There is a Serpent in *America*, which has a great number of teeth in each Jaw, which serve for the swallowing of his Prey, and whilst the teeth in one Jaw remain unmov'd, and serve to retain it, the teeth of the other are thrust out to hook it, and bring it in again; whilst it draws it in the teeth in the other Jaw are thrust out, and by this Alternate Motion, the Prey is conveyed into the Throat.

The Flander bruises shells with his flat Mouth.

The Parrot eats very readily, because its upper Jaw is moveable, and articulated in such manner with that; though the lower Jaw be much shorter than the upper, yet he can thrust it to the end.

Those Birds which have the upper Jaw crookt, have the lower Jaw short, but so notwithstanding that they can thrust it to the top of the upper. Those Birds which have a long strait Bill, have not this property of moving their lower Jaw, nor can they eat so well as a Raven. Small Birds whose Bill is sharp and cutting, and has a Channel in it, and who only live upon Seeds, bring them to the sides of their sharp Bill, and turn them often about, till they have found the Juncture of the Seed, and then they break it.

Toads and Serpents have so large a Throat, that they can swallow whole Fishes, and when they happen to take them

them wrong, they very dextrously toss them into the Air, and catch them again by the Tail, that so the Gills may not stick in their Throat. Herons do not make use of their Bill to break shells, but swallow them entire, the Heat of their Belly relaxes the Muscle which keeps them shut, and when they perceive the shell open, they vomit them up again to eat the Flesh. Boars do not employ their Tusks in Mastication, but make use of them in tearing up Plants by the Roots.

The Crocodile has no *Incisores* nor Grinders, all that it has are Dog-teeth, which are extreamly white, hard, round, and pointed, with a Channel encompassing them all round, their Root is hollow, and twice as long as the Tooth, and they are dispos'd in such a manner, that they leave as much space full as empty.

Crabs have three teeth placed at the bottom of their Stomach, and move that part in the comminution of their Meat. The Fish called *Orbis*, has four teeth in its *Gula* as big as the Incisive teeth of a Horse.

Hares, Squirrels, and Rats, have long Incisive teeth, strong enough to gnaw any hard Body; and Beavers have very large and strong ones, with which they can cut off great Branches of Trees for the building of their Hurts. These pass one over another without meeting, when the Animal makes use of them.

The Insect call'd *Spondylis*, has two teeth which meet like Scissars, and with these he cuts the Grass Roots.

Besides these mentioned which are drawn from the teeth, *Aristotle* has long since given us several other Marks whereby to distinguish the several Natures of Animals, and their manner of Living.

In the *Miscellanea Curiosa*, *Obs.* 5. There is a Relation of a Child of a year old, very lean, and of a livid Complexion, who upon breeding his teeth had several white ones, and after some time a black one came out. The Relations were something surprized at this, however finding that in a whole years time it did not incommode the Child, they deferred acquainting any Physician with the Accident; but perceiving all the teeth of the same side which came out after to be black, they called in a Surgeon, who being ignorant of the Nature of the Distemper Scarified the Tumour on the Gum, whereupon not only the Gum it self, but the whole Cheek Ulcerated. As soon as the Surgeon saw this, he desired the Relations to call in a Physician, who found the
Distem-

Distemper to be a Raging *Cancer*, with a horrible Ulcer, proceeding from improper Remedies applied to the Part. Upon this to palliate the Case, he advised the Patient to a moist and cooling Diet, the Child having a Heetick Fever, and prescribed some Lotions to gargle its Mouth, but notwithstanding the use of all Means which could be thought of, the *Cancer* extended to the Temporal Muscle, and the Patient died convuls'd.

Doubtless it is a thing without precedent, that so furious a Tumour should extend it self so far, without affecting the other Teeth.

It happened some time since, that a certain Person upon pulling out a Tooth, lost above a pint of Blood by the Wound, and the Operator could not stop it, but at last the Flux was suppressed by a Tent wetted in the *Styptick Water* before mentioned.

Fabr. Hildanus, Cent. 4. Obs. 21. tells us, that a certain Priorefs of 40 years of Age, being troubled with a violent pain in her Teeth, having tryed several Remedies in vain, at last had *Aqua-fortis* put in them, upon which either by reason of the Caustick Nature of the Medicine, or the continuation of the Fluxion, several of her Teeth rotted, broke and came away, leaving several Cavernous *Fistula's* in the Chin, and Ulcers under the Glands, which voided above three pints of Matter every Day. At length all the Teeth rotted, and she became Feverish, and the Bones of the Head were fouled.

C H A P. LIV.

Of Prothesis or supplying Parts deficient.

THIS is the *Artificial supplying some part which is deficient in Humane Bodies.*

THE CAUSE The most ordinary occasion of this, is the Extirpation or Amputation of some Limb which cannot be cured by any other means; sometimes indeed some Member or other is wanting in Children when they are born, or is after eaten off by Venereal Distempers.

THE SIGNS. The Defect is visible.

The O P E R A T I O N.

Sometimes the small Bone in the Roof of the Mouth falls as in the Pox, and then the Patients Meat comes out of his Nose; and there are many words which he cannot pronounce plain. To remedy this Infirmary, take a thin Plate of Silver of a Figure fit to stop the Hole, make a little Ring in the midst of it, and put in a small bit of Sponge, and thrust this into the Hole of the Palate, the Moisture of the Mouth swells this Sponge, and fastens the Plate so close to the Palate, that it is very difficult to draw it out, and by staying there it supplies the place of the Bone which is lost.

Sometimes the tip of the Tongue is cut off by the Teeth, and this is occasioned either by Convulsions, or some Accidental Blow under the Chin. When this happens, the Patient cannot pronounce many words by reason the tip of the Tongue cannot strike the Roof of the Mouth. For the remedying this Inconvenience, take a small Spoon about the bigness of a Silver Penny, and apply this over the Tongue in such manner, that its Cavity may be downward, and its Convexity upwards, that it may strike the Roof of the Mouth, and by this means the Patient may pronounce his words Articulately.

When any of the Teeth fall out, make new ones of Ivory, and put them in the place of the other, fastning them with a Silver Wire.

If the Ball of the Eye fall out of the Orbit, make one of Glass and put it in its stead.

If there be any loss of Substance ; as for instance, if a Woman has lost a portion of Flesh in her Arm, or a Man part of his Nose, or the like, then cut superficially the Part which you intend to prolong, and cut superficially the Arm or some Flethy part in any Person who will submit to it, and apply the two Wounds to each other ; for by this means they will be agglutinated in the same manner as the Lips of all recent Wounds, and when they are once grown together, cut off as much Flesh as is necessary to supply the deficiency of the Part applied, and form it into shape with a pair of Scissars.

If you would thus inoculate, when the Nose happens to be cut off, Scarifie the sides a little, and make an Incision into the Flesh, put the Nose in, and when it is well agglutinated, cut off as much as you think convenient, and pierce it to make Nostrils, putting in two Pipes till the part be Cicatrized.

If Children have crooked Legs, put them on Boots of a firm Leather, and in time they will become strait, as they grow.

If the Arms are contorted, let some streight Splints be applied on the side which is bent, and then make a Bandage, and by degrees the Member will come to its Natural State. In the last place, when you make any Artificial Member, let them have the same Motion as the Natural.

THE CURE. In restoring distorted Bones, Boots, Splints, and other like Machines are not sufficient, but you must likewise use Emollient and Relaxing Cataplasms to make the Bone flexible, and the part must be bound straiter by degrees, as you find it recovers its right Figure ; for if it be bound too strait at first, there is danger of its Gangrening.

R E M A R K S.

The Ancients repaired the loss of parts, as a Nose cut off or the like, by inoculating Flesh out of the Arms or Buttocks of their Slaves.

C H A P. LV.

Of Transfusion and Injections into the Veins.

THIS Operation is the Injection of some Liquors into the Vessels of an Animal, or the Transfusion of the Blood of one into the Body of another.

THE CAUSE. The Intention of Transfusion, is that the Medicine may act more promptly and effectually. This may be practised in Paralytick Persons, when the Patient is disabled from Swallowing, by a Debility or Convulsion of the Nervous Fibres of the Gullet, or in Hypochondrical and Scorbutick Persons, or when some Stryptick Vapours constringe the Throat, and hinder Deglutition or the like, happens from a Swelling of the Tonfils, or Inflammation of the Muscles of the Throat in a Quinsie, or in such Persons as have a natural Antipathy to all Medicines, and cannot retain them in their Stomach; or lastly, when Medicines receive too great an Alteration in the *Prima via*, and lose their effect. No internal Medicines taken by the Mouth, can act so promptly as Infusions in acute Distempers, as Syn-copes, Palpitations, Apoplexies, Vertigo's, Epilepsies. Infusions put the Blood into a gentle Fermentation, and prevent Hypochondriack Distempers, Convulsive Asthma's, all Chronical radicated Diseases, and are of use in all acute Inflammatory and Malignant Fevers.

THE SIGNS. The occasion of making Injections, are those Distempers above mentioned.

The O P E R A T I O N.

Before you make any Injection, it is necessary to consider well which Vessel is most proper for this purpose. In the first place Arteries are not very proper; for if the Incision be large, it must necessarily be dangerous, and cause an Aneurism, and the Wound be hard to heal, because the Vessel lies deep in the Flesh; on the contrary, if it be very small it will be very difficult to introduce the Instrument. Besides the injected Liquor ought to be conveyed to the Heart, the most direct way imaginable; and for this reason the Arteries are not so proper as the Veins, and the Veins in the upper

per Syftan ought to be preferred to those in the lower, and the Jugular to the Veins of the Arm. However since the latter are more accessible, and more easily managed than the former, for the most part it is more convenient to make the Operation in them. When you have chose the Vessel, chafe the Part with *Wine* or *Elder Water* very hot, or *Spirit of Wine Camphorated*. After this make two Ligatures, viz. one above the place where you intend to make the Injection to stop the Blood, and cause the Vein to rise, and the other below to keep the Blood from flowing out, and hindring the Operation. When the Incision is made lay your Finger on to close it till the Instrument be in, and then unbind the Ligature above, to give the Infusion room to pass, pressing it upwards to promote its passing on, and when the Injection is made, close the Orifice in the same manner as in Bleeding, and unbind the Ligature beneath, that so the Blood may continue its Circulation, and carry the Injection with it.

Let the Incision be made with a Lancet, and the Injection with a Bladder full of Liquor, at the end of which there must be a Silver Syphon slender and crooked towards the point, that so it may the better pass up the Vein, or you may use a Silver Syringe, which is much better in all respects.

Transfusion of Blood out of the Veins of one Animal into another, is performed in this manner. Take the Carotid Artery, for instance, of a Dog or any other Animal, and separate it from the Nerve which accompanies it, and lay the Artery bare for about an Inch in length, then make a strong Ligature on the upper part, and another Ligature below towards the Heart with slip-knots, which you may loosen as occasion shall require. When you have made these two Knots, pass two Threads under the Artery between the two Ligatures, and then open the Artery and put a Quill into it, and tie it close with a double Thread on the Pipe, and put a good stopple into it. When this is done, lay the Jugular Vein of any other Animal open an Inch and a half in length, and make a slip-knot at each extremity; and between these two knots, put two Threads under the Vein as you did in the Artery, and make an Incision into the Vein, and thrust in the two Pipes, one into the lower part to receive the Blood, and convey it to the Heart, and the other into the upper, which comes from the Head by which the Blood of this second Dog may flow out on the ground,

and when the Pipes are disposed in this manner, put in a stopple.

When all things are thus prepared, let the Dogs be tyed and laid one by the side of the other, and then begin to unstop the Pipe which goes into the descending part of the Jugular Vein of the Recipient Animal, and after that unstop likewise the Pipe which goes into the Artery of the other Dog, and insert two or three Pipes between them. When you have done this untie the Ligatures, and the Blood will pass in a rapid current from the Artery of the first Animal into the Veins of the other. When you perceive the Blood passes, unstop the Pipe which is inserted into the ascending part of the Jugular Vein of the Recipient Animal, (not continually, but by intervals, (having first made a Ligature, or at least compressing with your Fingers the Veins on the opposite side) and let the Blood run out upon the Floor, as you judge his Strength can bear, till the Emittent begins to cry, and so faints, falls into Convulsions, and so dies. Then take both Pipes out of the Jugular Vein, and having tyed the slip knot strait and firm, cut the Veins asunder above it. This may be done without the least Inconvenience, one Jugular alone being sufficient to convey the Blood to the Head and upper parts, because the two Veins communicate about the *Larynx* by a large *Anastomosis*. When you have done this, stitch up the Skin, and let the Dog go.

Let not the distance between the Dogs be so great, as to stretch the Veins and Arteries, which would very much hinder the conveying of the Blood from one to the other. You must from time to time observe the beating of the Blood in the Jugular Vein, and when you cannot perceive this, you may conclude that the passage is stoppt by some Clods of concremented Blood, and when this happens, you must take the Pipe out of the Artery of the Emittent Dog, and unstop it with a Probe to clear the Passage. This is very apt to happen when the Emittent Dog is almost spent, for then the Heart projects the Blood feebly, and it coagulates much sooner; and therefore for the making this Experiment with more Success, let the Emittent Animal be larger than the Recipient; or if you please, you may take two or three Animals, provided you let as much Blood out of this Recipient, as you convey into it; for otherwise it must unavoidably be Suffocated.

The Animals which emit the Blood, ought as near as is possible to be of the same Constitution and Age, and for
some

some days before to be fed with like Nourishment, that so their Blood may be of the same Temper.

Silver or Copper Pipes are better than Quills, and these must be a little crooked and slender at the ends, that so one end may go into the Quill, and the other into the Vein or Artery with a little rising edge, for the better fastning the Thread.

THE DRESSING after this Operation, consists in laying a good Compress on the Vessel which is opened, and making the same Bandage as in Bleeding, and then dressing the Wound.

THE CURE. The Injection must be adapted to the Distemper which you intend to cure. Purgative and Vomitive Medicines are by no means proper to be injected, because in all Purgatives there is a latent Malignity which weakens the Patient exceedingly, and causes Trembling of the Knees, a lean Visage, and a sinking in of the Eyes, when they are taken by the Mouth, and by consequence cannot fail of causing much greater disorders when they are injected by the Veins, and are admitted into the Mass of Blood crude and unprepared. We find by Experience, Purgatives injected into the Veins of a Dog, create mighty Disturbances and terrible Symptoms, and Antimonial Injections cause violent Vomitings and kill them.

Diuretick Injections by vertue of a Nitrous Salt, dispose the Blood for a more easie separation of the Serolities in the Kidneys. Sudorificks may be injected successfully, when the Patient cannot take them by the Mouth, or has taken them without effect, which last point indeed ought to be considered before any Injections are made at any time.

Authors commend half a dram of Spirit of *Sal Armoniack*, to which if you please you may add a dram of Spirit of *Wine Camphorated*; or *Volatile Salt of Sal Armoniack* with *Heinfius's Antipestilential Oyl*, and so form a sort of *Sal Volatile Oleosum*, a dram of which if it be injected, is an excellent Sudorifick in Malignant Fevers. *Humane Blood, Stags, Vipers or Serpents Blood*, are good Sudorificks. As for Cordials, *Cinnamon* and *Ambergrease* are the most valuable. Spirit of *Cinnamon* together with distilled Oyl of *Amber, Ginger* and *Volatile Salt of Hartshorn*, are admirable. *Essence of Ambergrease* prepared with Spirit of *Roses*, is excellent. Injections of *Opium* are good to calm the Impetuosity and Fury of the Spirits. Preparations of *Cinnamon* and *Ambergrease* are admirable in *Syncopes*, arising from

too great a Fluidity of the Blood, and so is *Vinegar* made of good *Wine*, and rectified with a mixture of *Spirit of Wine*, and *Spirit of Roses* Ambrated. But if the *Syncope* arise from a coagulation of the Blood, Volatil Salts are the most proper Remedies to correct the Acid, and dissolve it promptly. For this reason *Tincture of Coral* with Volatil Salt of Tartar in a proper Vehicle, is a very good Remedy in *Deliquiums* and Palpitations of the Heart. The Ingredients of Apoplectick Injections, must be the Volatil Salts and Spirits of Plants and Animals; for instance; of *Harts-Horn*, *Skulls* and *Bones of Men*, *Staggs* and *Humane Blood*. Volatil Salt of Amber is a glorious Medicine, and so is *Spirit of Wine*, and Compound Theriacal Water. *Spirit of Lilies of the Valley*, or *Black Cherries* impregnated with Volatil Salt of *Harts-horn* and a little *Camphire* by several Cohobations, is an excellent Remedy.

Epileptick Injections may be made of Specificks actuated with *Camphire*, or allayed with *Essence of Opium*. A Spirit drawn from the *Secundines of a Woman*, are very good; and there is a mighty Antepileptick Virtue in *Peacocks*, *Storks*, *Lions*, and *Humane Dung*. In short, all Specificks are proper to inject.

R E M A R K S.

Etmuller tells us, that having made an Injection of Spring Water into the Crural Vein of a Dog, the Animal licked the Incision for the space of half an Hour, and then ran away, as if nothing had been done to him.

He injected an Ounce of Sack into the Veins of another Dog, but no alteration appeared in him, because the Dose was too small; but if any quantity be injected, he assures us the Dog will reel and stagger like a Drunken Man.

Upon injecting an Ounce of the Golden Purging Wine, which is a Dose sufficient for a Man, the Dog seem'd to be sick, and was perpetually running from one place to another; and seven Hours after, he plentifully evacuated his Body. In some Dogs he tells us, he found this Medicine work in an hours time,

He tells us upon injecting an Ounce of a colourless Infusion of 16 grains of *Crocus Metallorum* into the Veins of a Dog, the Animal vomited two Hours after with a Hiccough, and Sighed like Persons in a Malignant Fever, seeming to be very much disturbed, and frisking from one end of the Chamber to the other, and the next Morning was found dead.

Another

Another Dog swallowed as much *Opium* as would kill a Man, but after when an Ounce of the Liquid Extract was injected, the snarling Cur became very quiet, fell into a profound sleep, and in the space of half an Hour could not be wakened; he run a Pin through his Tongue, and into his Foot. He shewed only some signs of Sense, when a Pin was run into his Head. The Dog continued to sleep for the space of two Days and a Night, and then recovered and did well.

A Dog upon injecting Tincture of *Opium* into an Artery fell into a *Vertigo*, a great Dofiness, and after became very fat.

Aqua Regia being injected into the Jugular and Crural Veins of a Dog, he died suddenly. The Blood was found coagulated, and the principal Vessels were burst. *Spirit of Nitre* being injected into the Subclavian Vein of a Dog, he died soon after, and the Blood was found concentered in the Heart, and the other Vessels of the Body.

A certain Soldier in the Hospital of *Dantzick*, being under cure for an inveterate Pox, had seven Drams of *Resin* of *Scammony* infused in three Drams of *Essence* of *Guajacum*, which vomited him excessively; whereupon the Symptoms abated, and the Ulcers were healed in three days time.

A Servant Maid subject to an Epilepsie from her Infancy, had six grains of *Resin* of *Falap* dissolved in Water of *Lily* of the *Vallies* injected into her Veins, upon which she vomited, and continued several Months free from her Distemper.

A little *Rhenish Wine* being injected into the Veins of a sucking Whelp, and it heated it extraordinarily; upon injecting some drops of a Narcotick Liquor it became sick and shivered. About half an hour after a little purgative Liquor being injected into the Veins, the Animal was purged and did well.

C H A P. LVI.

Of the Bones in general, and of their Structure and manner of Nutrition.

BEfore I deliver the Method of reducing Fractures and Luxations, I think it not a miss to premise a general Idea of the Bones, with their structure and manner of Nourishment.

The Bones are hard, and light parts which lie within the Flesh. These are the Stabiliment which support and give shape to the whole Fabrick, and the Muscles which move the various parts terminate in them. Their substance in Adults appears uniform upon a Transient View, and for this reason the Ancients did suppose them to be Simple and Homogeneous Bodies; but in a *Fetus* of a Month old, they appear only to be a Congeries of Fibres of different kinds, as Veins, Arteries, Nerves, Lymphæducts, and compos'd perfectly of the same Materials with other Flesh. Each Fluid circulates through its proper Vessels, in the same manner as in all other parts of the Body, and the only difference consists in the degrees of hardness which the Bones have, which does not in the least alter their Figure, or obstruct the passing and returning of the Liquors which serve for their Nourishment.

The Ancient Physicians imagined them to be simple and spermatick Substances, which they founded upon their appearing like hardned Glew, and not being reproduced when they are once cut off. Nature, say they, cures all Hurts in any part by the first or second Intention; that is, either by reproducing the same Substance, as in all parts that are formed of Blood, or supplying the Defect by a *Callus*, or some like Accessory Substance, and those parts which admit only of this latter way, are all Spermatick; they imagined that the Bones were formed in the same manner as Stones and Minerals in the Bowels of the Earth, by a subsiding of the gross and terrestrial Parts of the Seed; but this Opinion is refuted, by reflecting on the Structure of the Bones, which plainly appear to be Vascular, or a Congeries of Fibres with *Vesiculae* between them, which communicate with each other; indeed they seem only to be Elongations of the

the Tendons, and there is no Bone in the Body without a Tendon annexed to it, and the Bones in time become distinguished from the Tendons by their hardness. The Tendons are sometimes, though rarely, found, Ossified as well as Cartilages and Membranes, which are an Expansion and Texture of Tendinous Fibres, as the *Falx* of the *Dura Mater*, and a portion of the *Aorta*, which sometimes is found Bony in old Bodies. The Bone which is found in the *Basis* of the Heart of a Stag or Ox, is nothing else but the Mouth of the *Aorta*, in which the Valves are planted, ossified, and the Tendinous part of the end of Feathers in Fowls, is often ossified, likewise all which proves the truth of our Assertion.

The Ancients thought the Accretion of the Bones like other Mineral Bodies, to proceed from the congection of Matter which lodging on the Part and concreting there, in time formed several *Strata* lying one over another; but this Opinion is destroyed by discovering their true Composition, and that they consist of Fibres and Channels by which their Imperceptible Nourishment is conveyed to the most remote extremities.

The Ancients for want of Knowledge in Anatomy, and discovering the Veins and Arteries which every where run through the Bones, did believe them to be nourished by the Marrow, because that Oleous Substance is not only contained in them, but has the same Colour, Taste, and Sulphurous Scent with them, and humects their Substance; but since Nature always acts in an uniform manner, it is not probable that this can be the Nutritious Juyce, since the Bones of the Ear are entirely solid, and some other hollow Bones instead of Marrow, only have a Membrane interspers'd with Arteries and Veins, or Foliaceous Bony Expansions with numerous Blood-Vessels, as the *Sinus* of the Brain. The Shells of Crawfish which are a sort of Bone are destitute of Marrow, and only have a Muscle for the moving their parts. The *Chameleon* has no Marrow in the Skull, but only the Temporal Muscles which are contained under make their exit, from whence it may be very well inferred, that the Bones are not nourished by the Marrow.

Some *English* Anatomists have imagined the Bones to be nourished by the Nervous Juyce, which they are induced to believe, because that is of the same colour with the Bones, and abounds in the Joynts, and near the insertion of the Tendons. They imagine this Liquor being discharged from
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the Nerves into the Muscles, insinuate it self into the Tendinous Fibres, which are continuous to the Bone; but since these Gentlemen have not hitherto proved the Nerves are hollow, or that the Liquor found near the Joynts and Insertion of the Tendons proceeds from them, their Opinion is without Foundation. It is therefore more rational, to think that this Oily Matter is filtred through the Glands in the Ligaments of the Joynts, and serves to humect and render these parts supple, and help their Motion, and that the Blood is their Nutriment. An Objection I confess may be raised, that the Bones and divers other parts of the Body are very dissimilar; and therefore it is not probable their Nutriment should be one and the same substance, to this I think we may reply, that the Blood however it appear to be one uniform Liquor, is compos'd of parts very different in their Colour, Consistence, and Quality, as appears by the separation, when it is expos'd to the Air in a Porringer, besides the parts of the Blood may assume a new configuration, according to the various filtrations they undergo, and the same Matter modified in these different manners, being dispensed to all parts of the Body, may lodge in those Pores which are fitted to receive it.

For the confirmation of this Doctrine, and the evincing the circulation of the Blood through the Bones, there needs no other proof than this; that in the Bones of Recent born Animals, one may receive some drops of Fluid Blood in their Substance, and the Cavities of the Bones are red; add to this, that when a Bone exfoliates, and a small Plate comes off, there always appears Blood beneath.

Of the Marrow.

The Marrow is a sort of subtil and penetrating Oyl, prepared out of the more unctuous part of the Blood, and reserved in small *Vesiculae*, which are interspersed with many Veins and Arteries.

Those *Virtuosi* who have nicely examined the Structure of Trees, find a very great Analogy between them and Animal Bones, the Pith being nothing more than a Collection of *Vesiculae* or small Bladders, which contain the Sap in the same manner, as the Marrow is contained in Animal Bones.

When the Blood in its Circulation arrives at the narrow Extremities of the Arteries, the fine subtil Oyl is thrown off, and conveyed by certain small Channels into the Cavities of the

the Bones where it is repositèd, for the use which Nature has designèd it, however it is not wholly lodgèd here, but some portion is received into the Veins, and circulates with the Blood. By this means it is prevented from corrupting, as all Animal Liquors must of necessity do, when they are once extravasated, and cease to circulate. This Balsamick Substance is of very great use to sheath the virious Salts, and reduce the Blood to a good and laudable temper, and make it more fluid, and better disposèd for Circulation. This is that which the Ancients understood by their *Humidum radicale*: Some portion of this Oyl insinuating it self into the Porosities of the Bones, makes them more supple, and therefore in superannuated Bodies, and such as have an inveterate Pox where the Marrow is wasted, the Bones are more brittle.

Of the Callus, and the manner how it is formed.

When a Bone is broke, there is a Tumour grows around it, which is called a *Callus*. This proceeds from a congestion of the Nutritious Juyce, which flows out from the Extremities of the divided Vessels, and is concreted around. The same thing happens upon dividing the Fibres, which compose the Bark of a Tree where part of the Juyce flows, and the rest forms a sort of Substance Analogous to the *Callus* in Bones, and so makes Reparation of what is lost. In Women with Child the *Callus* is not so soon formed, as in other Persons, because a great part of the Nutritious Juyce is employ'd in perfecting of the *Fœtus*, and in all Persons whatever the Age, Constitution, Diet, Season of the Year, Climate, Ability, and Care of the Surgeon, have a great share.

There is a vulgar Mistake, that the Bones are fuller of Marrow at some certain times of the Moon, than at others, but Mr. *Robault* has irrefragably confuted this, and plainly shewn that at all times of the Moon whatever, there is a plenty of Marrow in the Bones of some, and very little in others; and that the Deficiencie do's arise from a want of Nourishment or great Fatigue. He has observed that there is but little Marrow to be found in the Bones of Sheep, which come from the remote Provinces to *Paris*, and on the contrary, that there is a great deal to be found in those which have reposed themselves for a long time, and have been well fed before they are killed. There is another Mistake

stake likewise which prevails amongst some sort of People, who think Fishes are fatter and leaner at one time of the Moon than another; for whatever be the time of the Moon, some Fish will be lean, and others fat. The leanness of Fish very often proceeds from Tempests, or their going too far up Rivers; for ordinarily they are found very fat near the Sea, and very lean at a great Distance from it. Fishes taken near *Calais* most commonly are lean, because the Sea thereabouts is for the most part very rough, and all Fishes waft very much if they are kept for any time in Nets.

Most Bones may be distinguished into four sorts of parts, the hardest which composes the Body of it, Processes which arise from it, and are continuous with it, the *Epiphyses* or Appendages which are little additional Bones contiguous to it, and the several Protuberances which jet out in any part of it. The *Epiphyses* are but external Additaments, and in young Bodies may easily be separated from the Main Bone, and there appears a Line which divides the one from the other, which after disappears gradually, vanishes as the Infant grows up, till both together appear one continuous Bone.

Most Processes serve for the Articulation of the Bones, and the Insertion of the Tendons, Muscles and Ligaments, and have different Names imposed on them, according to their different Figures: For instance, if the extremity be round it is called its Head, if it insensibly grow larger, its Neck, if long and sharp pointed, *Corone*; if the Heads be little and flat *Condyl*. The Processes of the Bones again receive different Names from their Figure, and sometimes are called *Styloides*, *Ancyroides*, *Coracoides*, *Pterygoides*, *Mastoides*, from their resembling a Probe, Anchor, the Bill of a Raven, the Nipple of a Womans Breast.

The Cavities of the Bones which serve for the Articulation of the Joynts, if they are Superficial are called *Glene*, if large *Cotyle*, and the small Cavities formed for the passing of a Tendon are called *Sinus*, and the Holes through which the Vessels pass, Scissures. When the bottom of a Cavity is large, and its entry narrow, it is likewise called a *Sinus*, and a Cup or Cavity if it has a large Mouth and Bottom, and in the last place a Hole, if it passes quite thro' the sides.

Of the several kinds of Articulation.

That Articulation where there is an evident Motion, is called

called *Diarthrosis*, and that where there is no Motion at all, is called *Synarthrosis*. There are three *Species* of *Diarthrosis*, viz. *Enarthrosis*, when the Head of the Bone is large, *Arthrodia* when it is small and *Ginglymos*, when the Bones mutually receive each other.

There are three sorts of *Synarthrosis*, viz. *Sutura*, *Harmonia*, and *Gomphosis*. When two Bones enter into each other Indenturewise, this is called a Suture, in which manner the Bones of the Skull are united; but when there is a Line only, it is called *Harmonia*, and by this way the Bones of the upper Jaw are joyned. When a Bone enters into another, as a Nail into a Hole, this is called *Gomphosis*. In the last place, when a Bone is flat, and shelves down by degrees, this is called a Squammous or Scale-like Suture, and in this manner the Temple-Bone is joyned to the Parietal.

Symphysis is not so properly a *Species* of Articulation, as the Coalition of two or more Bones, which become one continuous Body. This is either without any middle intervening Body, as in the tender Bones of young Children, or with some *Medium* which in harder Bones unites the Parts together. This *Medium* is either some Fleshy Substance, and then it is called *Syssarcosis*, or some Cartilage, and then it is named *Synchondrosis*, or some Ligament, and then it is termed *Syneurosis*. The two pieces of the lower Jaw in Children, are united by *Synchondrosis*, and the Shoulder-Blade and the *Os Hyoides* by *Syssarcosis*, tho' to speak properly indeed, the Bones of the lower Jaw are not so much joyned by a Cartilage, as part of them remains Cartilaginous, and do's not Ossifie so soon as the rest, and the Conjunction by Flesh is really none at all, particularly in the instances mentioned, the Superior extremity of the *Hyoides* is bound to the Styloidal Processes, and the Shoulder-Blade to the Clavicle by Ligaments, the Muscles only serving for its Motion.

The Heads of all Bones are covered with a smooth, slippery Cartilage, and in the Cavity of the Joynts, there is a Mucilaginous Liquor which serves to lubricate them, and help their Motion. Add to all this, that the Ligaments are exceeding pliant.

C H A P. LVII.

Of Fractures in general.

A Fracture is a Division of a Bone, whereby the continuity is destroyed.

THE CAUSE. Fractures always proceed from some external Cause, as some Blow, Fall, or other Accident.

Fractures are Compleat or Incompleat, Simple or Complicate.

Compleat Fractures are such where the Bone is entirely broke, and incompleat, where it is broke in part only, such Fractures as are accompanied with Wounds, are called Complicate.

The Ancients reckoned up five manners, after which a Bone might be broke, and impos'd so many Greek Names of Fractures. The first where the Bone is broke directly across, and this may be called a Transverse Fracture. The second, when there is a Fissure lengthways. The third, when the Bone was round at the end. The fourth, when the Bone was broke in several pieces. The fifth, when a Shiver was wholly separated.

THE SIGNS that a Bone is broke, are the Crack which the Patient and the Standers by hear, a Depression in the place of the Fracture, a privation of Motion in the Part, and a crashing of the Bones upon touching them. Lastly, the Part gives way when it is prest and is crookt. If the Bones ride one over another the Part is contracted, and there is a Swelling and Pain in the place where the Head of the Bone is. This is occasioned by the tearing of the *Periosteum*, and the Compression of the Marrow. About three or four days after the Bone is reduced, there arises an Inflammation very like an *Erysipelas*, which sometimes is simple, and only seated in the Skin on the Fracture, and sometimes is attended with *Rigors*, and a violent Heat. This *Erysipelas* arises from a Laceration of the Nervous, Tendinous, and Membranous Parts, especially in Cacochymick Bodies. Sometimes Splinters of the Bones prick the Flesh, and cause a violent Fever; and thus much for Transverse Fractures, which are ever most easie to cure when they are simple, and most difficult and dangerous when they are complicated with some Wound.

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The Fissure of a Bone is more difficult to discover, than a compleat Transverse Fracture, especially if it be small : for the better finding out of these Fractures, you must try the part well, as you would a cleft Stick, to see if you can discover any inequality in it ; you must ask the Patient if in falling he could hear the Bone crack, if the Swelling arose soon after, and he could perceive any thing fall down gradually.

If a Fissure be taken in time, there is no difficulty in curing it, but if it be neglected, or unskilfully managed, and a Cariosity ensue, it is very dangerous, and cannot be cured without Amputation of the Limb. Fractures where the Bones do much recede from their Natural place, are more difficult to cure than others.

If the Fractured Bone be broke into shivers and bits, the Accident is more dangerous, because there is a great Contusion and Laceration of the Membranous parts which threaten an Abscess. When there are two Bones in a part, and only one is Fractured, the danger is much less than if both were broke ; because the Bone which is entire supports the other, and preserves the Natural Figure of the part, and there is not so great an Extension necessary for the restoring it.

Fractures in the middle of any Bone are not so dangerous, as when they are near the Joynt, because it is more difficult to reduce and keep it in its place, by reason of the numerous Tendons and Nerves which are apt to cause a multitude of bad Accidents

Fractures in the soft Parts if there be no Wound or Contusion, are not difficult to be cured, but if there be, there is danger of Pain, Inflammation, Convulsion, and sometimes of a Gangrene.

The Re-union of Bones is more speedy or slow, according as they are larger or lesser, more porous or compact. Small Bones are most commonly united in 25 Days, and the larger ones not under 40 or 50 Days. The Thigh Bone is more difficultly united, and requires a longer time, because its Muscles are large and thick, and it is very apt to fall out, and to assume an ill Figure, and is rarely so well reduced, but that the Patient remains a Cripple.

If the Reduction of a Bone be deferred too long it is ever difficult, because the Juices which circulate through the bony Fibres being concreted about the Extremities of the Vessels, Ossific, and stopping the Pores, hinder a supply of Matter for the forming a *Callus*.

The Bones are for the most part more brittle in Winter, than at any other time, because the excessive Cold constricts the Pores, and hinders the supply of that Oily Marrow, which humects and makes them supple; and for the same Reason, there is a more speedy Coalition in young, than in old Bodies, because the Passages are more open for the distribution of that Unctuous Medullary Substance.

The Bones in Big-bellied Women are not united without great Difficulty, the Reason of which seems to be, that a great part of the Nutritious Juyce in the Mothers Body, is employed in the service of the *Fœtus*.

In Oblique Fractures, the parts of the Bone are retained in their place with less trouble than in Transverse, because they help to support each other.

THE OPERATION.

The Surgeons business in Fractures is only to bring the two ends of the Bone together, and retain them there, and in the mean time to prevent all Accidents which may happen; but the Cure it self, and the forming of a *Callus* for the Re-uniting the divided Bone, is the Work of Nature. For the successful doing this, the Artist must have all Necessaries provided, all his Dressings in a Readiness, and some Persons by to assist him. The Part must be kept in a strait Situation, and the Hands which hold the Limb must be placed as near the Fracture as may be, and not above the next Joynt, which would be very inconvenient. For instance, if the Bone be a Leg, and that be broke in the midst, the Assistants must not take hold of the Foot, and the Thigh in order to make the Attraction, but must lay their Hands above the Foot, and below the Knee. If both ends of the Bone are together, there is not required so great an Extension, as when one Bone rides on the other, however it is necessary to make some sort of Extension to prevent the breaking off some Asperities by the ends, rubbing against each other.

Whilst the Assistants keep the Part extended, the Artist must make all Even and Level with the Palm of his Hand, pressing the Fracture all around, and pass his Thumb all along it to try if it be equal in all parts, for then he may conclude that it is well reduced. If he perceive any Splinter of the Bone to pierce the Flesh, he must make an Incision to reduce it, and then if it do not Re-unite, it will come away in the Suppuration. If

If there be a Fracture in the Great Bones, and they are not reduced at first, the Hands are not sufficient alone to perform it, but the Artist must use Machines, especially if the parts of the Bone ride on one another, and the Muscles be very strong; but he must be careful not to make too strong Extensions for fear of breaking the Vessels, and tearing the Tendons from the Bones.

The Signs which demonstrate a Part to be well reduced, are a Cessation of Pain, the recovery of its Natural Figure, it appearing in the same manner as when sound, which is to be attentively considered at each Dressing, particularly at first; because the part newly reduced may very easily be drawn out of its place by the Patients turning himself in his Bed, or some other Convulsive Motion of the Muscles.

When the Bone is restored make some proper Bandage, all which shall be described in their proper places.

When there is a Fissure only let the Part be bound strait, that so the Fracture may reunite. When there is a large, soft, Tumour on the Fissure which seems to be filled with Blood collected there, or a certain Liquor which exudes out of the Bone, it must be opened to give vent to the Humour contained in it, and the Orifice kept open with a Tent, and treated in the same manner as a Complicate Fracture, and the Bone and Wound healed together.

THE DRESSING. The Bandage must not be too strait, for fear lest the extraordinary Compression intercept the influx of the Blood and Spirits, and the part Gangrene and come away; on the other hand care must be taken that the Bandage be strait enough to keep both ends of the Bone together, that they may not fall asunder, upon the least stirring the Body. The Bandage may be concluded to be well made, if there be a small Tumour at the extremities, and the Patient is sensible of a slight Pain, and if there be no rising, and the Patient feel no Pain, the Bandage must be undone, and the Part bound straiter.

It is best to forbear all Cataplasms, for these only stop the Pores and hinder Transpiration. There must not be too many Splints, nor these be bound too tight together, but there must be at least a Fingers breadth between them, to avoid the Pain which may rise from too great a Compression; you must begin to tie these first in the middle, and then above, and lastly below.

The most proper time of undoing the Bandage is to be determined by the Accidents, for instance; when the Patient

ent is in very great pain, or the Bandage is loose take it off. Parts which have little Flesh, will endure Bandage longer than Carnous parts. If there be a great itching in the Part, the Bandage ought to be taken off, for fear of an *Erysipelas* or Excoriation.

If there appear any Vescications on the Part when the Bandage is taken off, they must be opened to let out the Water, and the part fomented with a *Lixivium* and *Spirit of Wine*, or a Solution of *Sal Armoniack* or *Salt of Lead*, or a Decoction of *Sage*, *Camomile*, *Melilot*, *Roses*, and a little *Camphire* in *White-wine*.

If no Accident happen, leave the Bandage as long on as may be, taking care that it do not grow loose.

THE CURE. When the Bone is reduced, care must be taken to take off the Inflammation by the use of proper Medicines, as Embrocating the fractured part with a simple Tincture of *Flowers of St. Johns-wort* in *Spirit of Wine*, or the compound made by adding a third part of *Earth-worms*.

If the Part be contused, chafe it with a Mixture of *Honey* and *Spirit of Wine*, which is an excellent Medicine to resolve the *Ecclymosis*, and appease all Symptoms. Inunctions with *Oyl of St. Johns-wort*, and Fomentations made with a Decoction of *Rosemary* in *Wine*, and a Liniment of *Oyl of Earthworms* and *Turpentine*, is very good. The following Catagmatick Emplaster is excellent. *R. Fine white Rosin lb Common Turpentine ℥iij.* Melt and incorporate these with Powder of *Meadow-sweet*, *Bistort*, *Round Birthwort*, till they are of the consistence of an Emplaster, adding a little distilled *Oyl of Humane Bones*, or to better the Composition, put in Extract of *Round Birthwort*, or melt in Powder of *Amber* or *Balsam of Peru* when you use it. This Emplaster is to be used after the Bone begins to re-unite. The two ends of this Emplaster must not be laid over one another, but a small Interval must be left between, and a Liniment made of *Oyl of Earthworms* acuated with the Chymical *Oyl of Rosemary* us'd outwardly.

Besides this, all inward and outward Means must be made use of. The *Lapis Osteocolle* in *Comfrey Water* is a good Specifick, but it is not convenient to continue the use of it too long a time, for fear it breed too large a *Callus*. *Hildanus's Powder* is very good. *R. Osteocolla prepared ℥i. Choice Cinnamon ℥iij Sugar ℥i.* Mix these and make a Powder, and give ʒj. for a Dose, or mix *Osteocolla* in a Decoction of *Periwinkle* in *Wine*, and drink several Draughts of it.

The

The Fracture must be unbound the third or fourth day, to see in what condition it is, and then must be bathed with Simple Water, or a Decoction of the Vulnerary Plants. The Bandage must not be too loose nor too strait, for if it should be too strait, it would hinder the Influx of the Blood and Spirits, and endanger a Gangrene. It is best to lay no Cataplasms on the Part, however if it be insisted on, lay on *Herb Robert* pounded, or Powder of *Bistort* infused in Wine, having first well rubbed the Part with Oyl of *St. Johns-wort* to help the Re-union, and prevent an Inflammation; but a Cataplasm is better than this.

In Fractures especially where there is a Contusion, if the Nerves, Ligaments, Tendons, or any like parts happen to be contorted or dislocated, *Forestus's* Cerate may be applied, which is thus made. *R. Solomons Seal* ℥iv. *Root of Marsh-mallows* ℥i. *Plantane Leaves* two Handfulls, pound them in a Mortar, then boil them, and then pulp them thro' a Sieve, and make them up with *white Wax* into a soft Cerate, adding Oyl of *Roses* and *Myrtils*, ā ℥ij. clear *Turpentine*, ℥iſs. *Ung. Egyptiacum* and *Dialthææ* ℥iſs. *Bole Armoniack* ℥vi. *Dragons Blood* ℥iij. *Frankincense* ℥i. of all the *Sanders* ℥ij. Mix these and make a Cerate, which is to be applied on the seventh Day in all Strains of the Nerves. And thus much for Transverse Fractures.

Of Fissures.

Recent Fissures are easily cured, there being nothing more required than the laying on some good Catagmatick Emplaster of *Resin* and *Comfrey Roots*, either with or without Splints, as occasion shall require.

The Part must be well bound to consolidate the Fracture, and if there be a soft Tumour which yields to the Impression of the Finger, it must be opened to let out the Matter, and the Orifice kept open with a Tent, and the Wound be dressed like a Complicate Fracture.

When the Extremities of the broken Bone stick out of the Wound, and are corrupted by the Air, the end must be filed or taken off with Pincers, especially if the point of the Bone pierce the Skin, and cannot be reduced to its Natural place, and the Wound must be kept open for a considerable time, to give the Fragments an opportunity of Reuniting, or Exfoliating. If the Splinters are separated, and neither adhere to the Bone or *Periosteum*, they must be

fetcht away with a *Forceps*, but if they adhere, the best way is to let Nature alone, who will either Reunite or throw them off, especially if she be assisted by the following, or some such like Liniment. *℞. Virgin Honey* ʒiʒ. *Earth-worms in powder* ʒiij. Mix all these and make an Unguent. The following is more potent. *℞. Powder of Aloes, Myrrh,* ā. ʒʒ. *Root of Comfrey, round Birth-worth* ʒiij. *Euphorbium* ʒij. and with a sufficient quantity of *Turpentine* and *Wax*, make a Liniment.

THE DRESSING. The Bandage must not be too strait for fear of a Mortification, nor must it be very loose for fear the Bones separate on the least Motion.

In making and taking off the Bandage, the same Directions are to be observed as before.

R E M A R K S.

Fab. Hildanus, Cent. 4. Obs. 87. relates, that a Soldier being shot in the Body, the Bullet past through his Liver, and thro' the Oblique and Transverse Muscles without hurting the Intestines, and through the *Os Ilium* near the *Sacrum*, and sticking in the Skin was taken out by a small Incision made into it. The Symptoms at first were very bad, but the Wound of the Liver being soon after cured, the Patient did not find any inconvenience. The Wound made by the Ball was soon cured in a Methodical Way, but about two years after the Soldier had a high Fever with *Rigors*, and a *Bubo* arose in the Groin, with a great Pain and Inflammation in the place where the Wound had been. The Surgeon procured a good Digestion, and brought away a large quantity of Matter, and several Splinters of Bones which presenting themselves fair, were taken out without any great difficulty, and the Wound being healed, the Patient enjoyed a good Health. But about a year after the Ulcer broke out again, and several Fragments of Bones came off from the *Os Ilium*. This instance shews us, that a Surgeon ought to be very careful in extracting all Extraneous Bodies, since it appears they may be lodged in several parts of the Body for a long space of time, without any notable Inconvenience.

C H A P. LXVI.

Of Fractures of the Nose.

THIS Operation is the Reducing of the Bones to their Natural Situation and Figure.

THE CAUSE of this Fracture is always some External Accident, as some violent Blow or Fall.

THE SIGNS which demonstrate that there is a Fracture of the Bones, are a Depression, and distortion of Nose which makes a disagreeable Figure.

If the Part be not reduced, it is soon filled with *Ozena's* or stinking Ulcers, and incurable Polypus Excrescences, the Party cannot breath through it, and loses his Smelling.

The Nose is compos'd of its two proper Bones, and the *Os Cribriform* and *Vomer*. The two proper Bones are two small Bones pretty solid, and almost of a square Figure pretty smooth without, but not quite so much within. They are joyned by a Suture in the place where they meet, with the Bones of the Forehead and the upper Jaw, and these two Bones form the bridge of the Nose, and it is these which are Fractured and Dislocated by violent blows. As for the *Os Cribriform* or *Ethmoides*, that is described in the enumeration of the Bones of the Skull, in the Chapter of the Trepan, the *Vomer* receives its Name from its resemblance to a Plow-share; in its lower part it has a Cavity, in which a small Process from the Sphæroidal Bone is enchased. This Bone is very minute, and in its upper has a small Channel, in which the Tongue of the Bony Partition of the *Ethmoides* is enchased. The *Septum Narium* or partition of the Nostrils is formed of these two Bones, and Surgeons must have a great care not to hurt this when they apply Causticks to consume Polypus Excrescences of the Nose.

The lower and inmost part of the Nose is formed by a Plane made of a Portion of the Bones of the upper Jaw, and those of the Palate. The small Bones of the Palate are very thin, and for that reason very apt to cariate in the Venereal Distemper, which if it happens, makes the Party snuffle or speak in the Nose. The way to remedy this in-

convenience, is to stop that Hole with a thin Plate of Silver, which has a Ring in the midst to put a bit of Sponge into, which is to go into the Hole of the Roof of the Mouth. For this Sponge imbibing all the Humidities of the Mouth, causes the Silver Plate to apply it self against the Roof of the Mouth, that it cannot be drawn out without a great deal of Pain. This Plate may be called the *Obturator* of the Palate. There is a Cartilage fastned to the end of the Bones of the Nose, which makes the tip of the Nose capable of Motion.

THE OPERATION.

Place the Patient in a convenient Posture, and then taking a stick cut it flat and smooth, and wrapping it round with Cotton, introduce it with the right Hand into the Nose to raise up the Fractured Bones which are depressed, observing to lay the Thumb of the left Hand on the Fractured Bone, that so raising it on the inside, you may bring it to its Natural Figure; and when you have reduced one side, you may do the same on the other, if there be occasion.

THE DRESSING. When the Bones are reduced, put a Leaden Pipe up the Nostrils to keep them in their due Situation. This Pipe must be made flat, and of a Figure accommodated to the Part, that so there may be no danger of hurting it. Before these Pipes be put up into the Nose, they ought to be anointed with *Balsam of Peru*, or *Oyl of Turpentine* mixt with Spirit of Wine, and to have two Ears or Rings on each side, that so they may be tied to the Patients Night-cap with Ribbons. When the Pipe is put up into the Nose, lay two small Triangular Compresses along on each side of the Nose, and lay a Past-board of the same Figure on the Compresses.

If there be a Wound which can very hardly happen, lay proper Medicines on to procure a good Digestion, there being no possibility of avoiding a Contusion, and an Emplaster on the Pledgit, on which lay Compresses and a Triangular Past-board, keeping them on with a Sling or Filler with four Tails. To apply this, take the two upper Tails with the Thumbs and Fore-fingers of each Hand, and apply the plain undivided part on the Nose, and bring the two upper Tails behind the Head, and back again on the first turn, and pin them where they end, then take up the two lower Tails, and bringing them over the Head, pin them in the

the same manner as the first, and this is a general Rule in the applying all divided Fillers.

There is another Bandage sometimes used when the Nose is concerned, which is called the *Fossa of Amyntas*. This is made with a Roller an inch and an half broad, and two Ells in length rolled up at both ends; you must begin to apply this behind on the top of the Head, and bringing the two ends of the Roller before, cross them on the Nose, and so bring them behind on the Nape of the Neck, and so again over the first turn, crossing on the Nose, continuing in this manner; and in the last place, making several Circular Turns on the Forehead, to fix these where they end. In making this Bandage, you must take care not to compress the Part too much, it sufficing if it be strait enough to keep the Applications on the Nose.

There is a third Bandage which is sometimes made use of in Fractures of the Nose, which is called *Accipiter* or Hawk. To make this, take a Rag and cut it into the shape of a Triangle, which may be large enough to cover all the Dressings on the Nose, and stitch a narrow Fillet about a quarter of an Ell in length, and three quarters of an Inch broad to the upper Angle of this Triangle, and lay this Fillet over the Sagittal Suture, and let it hang down behind; then stitch two more to its lower side, viz. to each Angle, and bring them over the Cheeks, tie them to that which pass over the Sagittal Suture; besides these stitch two to the bottom of the Triangle, which must be two Ells in length, and more than of an inch broad, and cross these two under the Nostrils, rising obliquely on the Cheeks to the side of the lesser Angle of the Eye, and so making a X behind the Head, bring them forward again, and cross them on the Nose; then bring the two ends round the Fore-head and pin them. This Triangle must have two Holes in the place of the Nostrils for breathing.

THE CURE. Dress the Part at least once a day in the same manner as all contus'd Wounds, forbearing to draw the Pipes out of the Nose till the Bones be consolidated, and confining the Patient to a good Diet.

R E M A R K S.

If the Bones are not reduced, there is danger of *Oxena's* and *Polypus's*.

C H A P. LXVII.

Of the Fracture of the lower Jaw.

THIS Operation is the *Reduction of the Fractured Bones, to their proper Situation,*

THE CAUSE. Fractures in this part frequently are occasioned by Blows and Falls.

Children till the Age of 7 years or thereabouts, have their lower Jaw compos'd of two Bones divided by a Cartilage, which in process of time is entirely Ossified. The Bone of the lower Jaw is very hard and smooth, and externally convex, resembling the Letter U. The Mandible or lower Jaw has four Holes, two Internal ones which are the largest, and two External ones which pierce its *Basis*; through each of the Internal Holes there passes a Rope compos'd of a Vein, an Artery, and a Nerve; the Nerve is a Ramification of the fifth Pair, and the Veins and Arteries of the Jugulars and Carotids. The Branches of the Nerves go out through the External Holes, and are spent on the Skin and Muscles of the Lips. All these Vessels are dispensed to the Roots of the Teeth of the lower Jaw, and carry Nourishment to them. The Bone of the lower Jaw has several Protuberances to which Muscles are affixed, these Extremities are flat and large. The lower Jaw has on each side two Processes, the one called *Condylus*, and the other *Corone*. The first serves for the Articulation, and has its Head arm'd with a Cartilage, and is received into a Cavity of the *Os Petrosus*, which is likewise armed with another Cartilage; which serves to facilitate their Motion. This Articulation is covered with a Ligament, the *Corone* is slender and acuminated, and into this the Tendon of the Temporal Muscle is inserted. All Blows on this Muscle are dangerous, and attended with bad Symptoms, it being covered with the Tendinous expansions of the Frontal, and other contiguous Muscles, and not with the *Periosteum* as is vulgarly, but erroneously thought.

In the Cavities of the Mandible the Matter is contained, out of which the Teeth are formed, and there are the Sockets in which they are set.

Of the lower Jaw in the Fœtus.

The lower Jaw begins to Ossifie in the second Month, and is compos'd of two Bones joyned together below the Nose, and jetting a great way out. In the third Month the Jaw is compos'd of four Bones, viz. two large ones joyned at the Chin, and two lesser ones which form the *Corone*, and these two Bones are joyned together by a thin transparent Membrane.

In the seventh, eighth, and ninth Month, it appears all-around the *Basis* of the lower Jaw, as well as the upper of those small Protuberances, which are more apparent in the *Fœtus* than in Adults.

The inequalities are the Cells in which the Teeth are set, or at least where they are first formed, and they lessen in proportion to the growth of the Jaw. The Holes in the inner part of the lower Jaw through which the Vessels which go to the Teeth pass, are invisible in a *Fœtus* of four Months old, but they are visible in the seventh Month, as well as the external Holes which penetrate the Bone.

The OPERATION.

If the Bones of the Jaw ride over one another, some of the Assistants must put his Fingers into the Patients Mouth, and make a slight Extension whilst the Surgeon presses the Extremities both within and without.

If the Teeth are loose, put them into their Natural place, where they will soon fix again, if they be tied with a Silver Wire or a waxed Thread, to those Teeth which stand firm. The most certain way to find whether the Teeth are reduced, is by comparing the Teeth of the lower Jaw with those in the upper, to observe if they answer exactly, viz. the Grinders to the Grinders, the Eye-teeth to the Eye-teeth, and the Fore-teeth to the Fore-teeth.

THE DRESSING. Lay on the Jaw a Compress of a competent length, and made of Rags several times doubled, and dipt in some Defensives, and then cover this with a Past-board of a Figure not unlike the Jaw, and make the Bandage called the *Capistrum* or Bridle. To make this, take a Roller of two Ells long, and an inch and a half broad, and begin with a circular turn round the Head, then pass under the Chin and rise on the Cheek, passing near the lesser Angle

Angle of the Eye ; then go obliquely behind the Head on the opposite Cheek, and under the Chin, and reascend on the first turn of the Roller, making an Edging on the fractured Jaw, then continue to proceed round passing behind the Head.

Take a Roller rolled up at one end, which must be three Ells in length, and about an Inch and a half broad, and begin with making a Circular turn round the Forehead ; then pass under the Chin and reascend on the Cheek, passing near the lesser Angle of the Eye, then turn obliquely behind the Head, and descend on the opposite Cheek, pass under the Chin, and reascend on the first turn of the Roller, leaving an edging on the Fractured Jaw, then proceed round passing behind the Head, over the Cheek, under the Chin, and make an edging on the Fracture, then reascend on the Cheek, pass behind the Head, over the opposite Cheek, under the Chin, and make a third edging on the Fracture ; then reascend and proceed over the first Turn, pass behind the Head, bring the Roller over the Chin, and make two Circular Turns there, and finish the whole by making two Circular Turns with the remaining part of the Roller round the Forehead and Head, and in the last place pin the ends. In making this Bandage observe to make edgings on the Fracture, and in all the other parts, to bring the Roller directly over the neather Turns.

If the Jaw be broke on both sides, reduce it in the manner above described ; and lay a Compress with a Hole in the middle on it, to put the end of the Chin through, and so apply each end on the sides of the Jaw respectively ; over these stich a Past-board of a Figure adapted to the Jaw, and perforated in the midst likewise, and keep these on with the double *Capistrum* or Bridle, which is made in the following manner.

Take a Roller five Ells long and an Inch and a half broad, apply this to the Chin, and bring each end of the Roller over the Cheeks, and make an X on the top of the Head, then pass it behind, and return on each side under the Chin, and pass over the Fractures, making an edging on each ; then reascend circularly over the same turns of the Roller, and make an X on the Head, descend under the Chin, and make edgings on the Fractures, then reascend over the Head, pass behind, descend and pass over the Chin, then reascend on the Cheeks, and pass over the Head, and so return and bring the two ends of the Roller twice over the Chin,

Chin, making Circular Turns there, then bring them behind the Head, and so round the Forehead to keep the other turns steady, and pin it where it ends.

But before I leave this Subject, I shall describe another Bandage us'd in hurts of the Chin in Children, which tho' it do not properly concern Fractures of the Jaw; yet can no where be better inserted than here, it being my Design to give the Reader Instructions in all the several manners of Dressing and making Bandages which can be required in a Course of Operations.

Take a Roller six Ells long, and more than two Inches broad rolled up at both ends, and apply the middle of it on the Forehead, and pin it there to the Night-Cap, then bring the two Heads behind the Patients Head, cross them there, and so bring them under the Patients Arm-pits, then bring them before and pass them behind the Head, and cross them again, and bring them over the Forehead, behind the Head, and cross them, next bring them under the Arm-pits, and having first made two or three turns about the Breast, pin the ends.

In Burns of the Face, make a Mask of Linnen Cloth, and having smear'd it with some proper Liniment, tie it behind the Head with Ribbons.

THE CURE. Let the Patient lie on his Back, for fear least the Bones should be displaced by his lying on one side, and during the Cure, let his Diet be liquid and Nourishing.

The lower Jaw is most commonly re-united in twenty Days.

R E M A R K S.

Fabr. Hildanus, Cent. 1. Obs. 81. gives a Caution not to continue the use of the *Lapis Osteocolla* too long, least it make too large a *Callus*, and the Part become Monstrous and Deformed, as he relates it once hapned to him in a Fracture of the Thigh. A dram of this Stone is given to the Patient in a Morning fasting, being finely levigated in a Marble Mortar with *Comfrey Water*, but the Surgeon must from time to time look to see that the *Callus* do not encrease more than is convenient, and forbear any longer using it when he finds this.

When the *Callus* happens to grow so large as to make a sensible Deformity of the Part, *Fab. Hildanus* uses this Method

thod to lessen it. First he foment the Part twice a day with this Emollient Decoction. *R. Roots and Leaves of Marsh-mallows, Bryony, White Lilies, Brank-ursin, Flowers of Melilot, Camomile, ā. one Handful, Common Wormwood, Red Roses, ā. half a Handful, Linseed, Fenugreek Seeds, ā. ʒi.* Boil these Ingredients in a Mixture of one part of Vinegar, and four parts of Spring Water, and foment the part with this Decoction; and after the Fomentation, anoint it with the following Liniment. *R. Mans, Bears and Ducks Grease, ā. ʒij. Juice of Earthworms and distilled Vinegar, ā. ʒi.* Mix these and make a Liniment, and with this anoint the Callus, and the whole Thigh. After all this he applied the following Emplaster to the Callus. *R. Emplaster of Frogs with Mercury, Emplaster of the Mucilages ā. ʒi.* Mix these and keep them on for the space of six Days, in which time they will extremely soften and diminish the Callus. In the last place in stead of the Emplaster, bind on a Plate of Lead pretty straitly, till the Part recover its Natural Size and Figure.

C H A P. LXVIII.

Of the Fracture of the Clavicle or Collar-Bone.

THE Operation is the Reducing the Bone to its Natural place.

THE CAUSE is most commonly some Blow or Fall.

THE SIGNS. If the Clavicle be compleatly broke across, that end which is fixed to the *Acromion*, together with the whole Shoulder-blade sinks, which is caused by the weight of the Arm.

If there be any Splinters, a pricking and sharp pain may be perceived; but if the *Fissure* be lengthways, it must of necessity become thicker, which may be soon discovered by comparing it with the sound Clavicle. The Clavicles are two Bones which very much resemble an *Italian s.* and are placed in the upper part of the *Sternum*. The External Surface of these Bones is extremely smooth and polite, but their inner substance is spongy and porous, which is the reason why they re-unite so soon when they are once fractured, whilst on the other Hand they are very much expos'd to Accidents

Accidents, and soon broken, having nothing besides the Teguments to protect them. At the ends of these Bones there are two Processes, one of which is Articulated to the Sternum, and the other to the Acromion of the Humerus, and their principal use is to keep the Shoulder-blades in their Natural Situation.

Of the Clavicles of the Fœtus.

There are no Bones in a *Fœtus* which are sooner Ossified, than the Clavicles which are entirely Bony, within six Weeks after Conception. Nature seems to contrive this for the defending the Heart, to preserve it from being compressed by the Sternum and Scapulae, which continue Cartilaginous for a long time.

The Clavicles are the largest and most solid Bones of the whole Body, till a *Fœtus* arrives at the third Month, and Age only adds largeness and strength to these Bones, their Figure being altogether the same as in Adults.

THE OPERATION.

If the Clavicle be broken asunder, an Extension must be made. For this purpose place the Patient on a Stool without a back; and draw back the Arm which is on the same side with the Fracture, and let an Assistant stand behind and push the Shoulder up, whilst another draws the Arm back: While this Extension is making reduce the Bones, by thrusting back that end of the Bone which is above, and drawing that below, so that both may exactly meet, and you may discover that they do so by feeling with the Thumb all along the Bone.

There is another way of making an Extension of the Clavicle, which is thus; put a Tennis Ball wrapt up in Linnen Cloth, and press the Patients Elbow close to his Side. This makes an Extension of the Clavicle, to the end the Bone may be reduced with more facility.

Or let the Patient lie on his Back on a Quilt laid on the Floor, and lay some convex Body under him, and between his Shoulders, and let both his Shoulders be thrust down, that so the two ends of the Bone may be stretcht as far under as may be, and the Surgeon have an opportunity of reducing the Bone in the mean time.

If

If there be any Splinters which run into the Flesh, make an Incision into the place which is pained, and lay the Bone bare to reduce the Splinters, and cut off the Asperities which prick the Flesh, with Pincers.

THE DRESSING. When the Bone is reduced, fill the Cavities above and below with Compresses of a length and figure suitable to the Bone, and over these Compresses lay others of the same Figure; let each Compress be stitched to a Pastboard of the same Figure with themselves, and keep these Dressings on with the Bandage called the *Cape-line*. This is made with a Roller six Ells in length, and three Inches broad rolled up at one end, the middle of this is applied on the Clavicle, then bring one end on the Breast, and to keep that steady, bring the other end obliquely behind the Back, and so under the sound Arm, and again forwards over the Breast, to fix that which hangs down over the Breast, and when this is done, bring it over the Clavicle, and so behind the Back, and keep it steady there; then bring the other end under the Arm, affected, to fix that Head which passes behind; and when this is fixed, bring it again over the fractured Clavicle, observing every time it passes over the Clavicle, to leave an edging. In the last place, continue to make Circumvolutions with the Roller about the Body, passing one Head under the Armpits, and carrying up the other end over the Clavicle, till it be quite covered with the edgings; and when the Clavicle is cover'd, make several Circular turns round the upper part of the Arm, leaving a space called the *Cranes Bill*, which at length must be covered by continuing the edgings on it with the two ends of the Roller, which in the last place must be circulated around the Breast, and then pin'd at the ends.

If the Clavicle be broke near the Shoulder, you must make the Bandage called the *Spica*, which the Reader will find described in the Chapter of the Luxation of the Shoulder-bone.

THE CURE. Let the Patient lie on his Back, for if he should lie on one Side, there would be danger of the Bones falling out of its place. He may eat roasted Meats, or any thing which is easie of Digestion, and there is no necessity of Abstinence, or being confined to a spare Diet, unless there be a Fever or Inflammation. This Bone most commonly is united in 20 Days.

REMARKS.

Fab. Hildanus, Cent. 1. Obs. 72. censures the Practice of those who use Viscous Meats, because they are apt to generate a thick Chile, and create Obstructions and Schirrosities in the Liver, Spleen, and other *Viscera*, and the Stone in the Kidneys and Bladder, Dropsies, and an Universal Weakness; and these Accidents he assures us he had known befall some Persons who had been Dieted in this manner.

C H A P. LIX.

Of a Fracture of the Shoulder-blade.

THE Operation is the Reducing the Fractured part to its Natural Place and Situation.

THE CAUSE. This like other Fractures, is occasioned by some Fall or Blow.

THE SIGNS. If the middle of the Shoulder-blade be broke, the Bone which is very thin, there yields to the Impression of the Finger, and there is a great *Stupor* which proceeds from the Nerves dispensed to the Muscles of that part.

The *Scapula* or Shoulder-blades are large, flat Bones placed on the Back, one on each side, and have the Figure of a Scaleneus Triangle, each Bone is concave on the inside, and convex without, and has two sides and Angles, one above, and the other below, on the back-side is a long Ridge which is called the *Spine*, the parts adjacent to this, are called the *Supra Scapulum*, that above, and the *Infra Scapulum*, that which lies beneath the *Spine*. The large end of the *Spine* where it is crooked, is called its *Acromion*, and that side which is next the *Vertebrae*, is called its *Basis*. This has two Angles, the one above, and the other below. In the *Scapula* there is a Cavity to receive the Head of the Shoulder-bone, and over this there is a crooked Process, which has the Name of *Coracoides* given to it, from its resembling a Ravens Bill. All the sides below which bounds

the *Scapula*, is called its lower side, and the other are called its Borders or Edges.

The *Scapula* is fastned to the Clavicle by several Ligaments. The Cavity which receives the Head of the Bone, is almost entirely formed by Ligaments which arise from the edge of the Cavity, and encompass the *Acromion* and *Coracoidal Process*; and this is the reason why the Arm is so subject to Luxations, it having nothing more than Ligaments to keep it in its place, which with a very little straining, may be forced out of its place.

The use of the *Scapula* is to defend the Ribs, help the Articulation of the Clavicles with the Bones of the Arm, and for the Rise and Infertion of Muscles.

THE OPERATION.

If any Fragments of Bones are broke off, and thrust out without pricking the Flesh, put them into their place with the Palm of the Hand, or the Thumb. But if they have any points, and prick the Flesh, make an Incision and snip off the jagged end with a pair of Pincers, and reduce the Bone into its right place if it adhere to the *Scapula*, but if it be loose take it off.

THE DRESSING. Lay a Compress dipt in some Defensive Liquors on it, and a Past-board over that, both of which ought to be as large as the Shoulder-blade, and to have the same Figure, and then keep all on with the Bandage commonly called the Star. This is made with a Roller four or five Ells in length rolled up at one end; apply the Extremity of the Roller behind the Back under the opposite Arm-pit, then bring it under the other Arm-pit, and over the Shoulder, that so it may make an X on the middle of the Back, then bring it under the other Arm-pit, and lastly over that, so it may pass behind the Back and make another X, leaving an Edging, and so bring it several times over the Back, still leaving an Edging till both the Shoulder-blades are covered, and then finish the Bandage by making several Circular turns round the Breast.

THE CURE. If there be a contus'd Wound on the *Scapula*, you must digest and deterge the Wound, dressing it twice a Day in the usual manner; but if it be a simple Incision, it must be united as soon as may be, and requires no more than some Defensive to be applied on it.

If there be no Wound in the *Scapula*, it is best to continue the Dressings on till the Re-union is compleated, unless some Accident arising shall require the contrary.

R E M A R K S.

The *Scapula* in a *Fetus* is round, and continues to be Membranous till the third Month, and then its Ossification begins with a little white spot in the Center, which expands it self by degrees. The Place of the Articulation of the *Scapula* to the Shoulder-bone terminates in an Angle, in the midst of which there is a white Line which extends a little farther. This Line is the first beginning of the Ossification of the Shoulder-bone.

The Spine on the Body of the *Scapula* is bony in the fourth Month, but the *Acromion* continues to be Cartilaginous at that time. The rest of the Bone of the Shoulder is Membranous, as well as the *Coracoides* Process, the Neck and above half the *Basis* of the *Scapula* are. About the fourth Month the Neck of the *Scapula* begins to Ossifie, but its *Basis* and lower Angle continue to be Cartilaginous.

This lower Angle is more remote from the Center of Ossification, and is longer before it be converted into perfect Bone.

The two Processes of the *Scapula* and its *Glene*, and the Head of the *Humerus* continue Cartilaginous till the Birth, and for this reason Recent born Infants cannot raise up their Arm. The small Fissure which is between the Coracoidal Process, and the upper part of the *Scapula* is not discernible until the fifth Month, but after it encreases, and by degrees becomes hollow, so that at the time of the Birth it resembles a Crescent.

C H A P. LX.

Of the Fractures of the Ribs.

THIS Operation is *Reducing the Ribs when they are broken, to their Natural Situation.*

THE CAUSE of a Fracture of the Ribs, is most commonly some Blow or Fall.

THE SIGNS. When a Rib is entirely broke, the ends sometimes thrust into the Breast, and at other times continue in their Natural place. If a Rib thrusts in it Compresses and tears the *Pleura* and the Lungs sometimes, and this creates a great Pain, and a constant pricking of the Part, the Patient cannot breath without great Pain and Difficulty, spits Blood, and a Fever is kindled.

If the Fractured ends thrust out, there is a sensible rising, but if the two ends of the Bone continue together, none of the above-mentioned Symptoms appear, and there is only a Crashing that can be perceived, in thrusting the Ribs with the Thumb.

The Ribs are placed on each side the Spine, and may well enough be compared to Segments of a Circle. Near the *Sternum* they are flat and large, and grow round in proportion to their distance, approaching to the *Vertebrae*. They are Articulated with the *Vertebrae* by two Productions, one of which is covered with a Cartilage, and implanted into the *Sinus*, and the other is joyned to the Transverse Process of the same *Vertebra* on the same side.

The Exterior Surface of the Ribs is rough and unequal, the Interior is smooth and equal. In their lower part they have a small Channel for the Reception of the Nerve and Intercoastal Artery with a Branch of the *Vena Azygos*, and the Surgeon must avoid cutting these Vessels in the perforating the Breast in making the Operation in an *Empyema*.

The Ribs are entirely Bony, but their Extremities toward the *Sternum* are Cartilaginous, for the better facilitating Respiration. They are fixed to the *Sternum* by their Cartilages, which sometimes become bony, especially in Women. The Number of the Ribs is not always alike no more than the *Vertebrae*; sometimes there has been found thirteen, more rarely eleven, but the most common Number is twelve. Of these

these, seven are called true Ribs, and five false or Bastard Ribs.

The true Ribs are placed in the uppermost part of the Breast, and are fixed to the *Sternum*. The Bastard Ribs are so called, because they are short, soft, and are not implanted into the *Sternum*, but adhere by the Cartilages to each other. The Bastard Ribs leave a void place before, to make room for the Motion of the Stomach. The lowest of the Bastard Ribs is the shortest of all, and does not adhere like the rest, but sometimes is found adhering to the Diaphragm, as well as the eleventh Rib.

All the Ribs are unequal in length and breadth. The upper Rib is short, flat, and more large and crooked than any of the rest. The middle are longer and larger than the upper, and the inferior are near upon the Matter of the same length as the upper, but not of the same breadth.

The Ribs make an Arch, which contains the Heart, Lungs, and other Organs of the *Thorax*, and besides they serve to give a Rise and Termination to several Muscles of the *Thorax*.

Of the Ribs in the Fœtus.

The first and last Ribs in a *Fœtus* of two Months old are Membranous, and the other are Bony. About the same time the Scissure through which the Intercoastal Artery, Vein, and Nerves pass, begin to appear. The Ribs begin to Ossify very early, which is so ordered by the Providence of Nature, for the better defending the Heart, Lungs, and other *Viscera* of the *Thorax*, which seem to want some such Rampart to protect them, and give them liberty to grow and exert their respective Functions. For the two first Months the Ribs are not Articulated with the *Vertebrae*, but are only planted to a Cartilage, which after becomes the Transverse Process of the *Vertebrae*.

In the third Month, as if Nature were ashamed of her lazy proceeding, on a sudden she Ossifies the upper Rib, which becomes as hard, large, and solid, as those which were Ossified in the second Month. About this time the last begins likewise to Ossify, which nevertheless continues to be Cartilaginous till the fifth Month, but this seldom happens. The Ribs continue to encrease and grow hard from the ninth Month, till the Birth.

In a *Fœtus* the Ribs are crookt, and like so many Arches form a Vault, which is the Cavity of the Breast, besides this there is another Curvature which is peculiar to the *Fœtus*, the six upper Ribs being crookt at the Extremity, and below in the middle. These Curvatures are not sensible in Adults, and gradually disappear as the Animal grows.

THE OPERATION.

If the Rib which is hurt thrust out, place the Patient in a Chair, and let an Assistant stand by to hold him; then bid the Patient bend his Body on the side opposite to the Fracture, and keep close his Mouth and Nose, and hold his Breath to dilate his Breast, this Dilation serving instead of an Extension; in the mean time thrust the two ends of the Bone together and reduce it. If one end of the Bone enter the Breast, make an Incision and take it out.

Ambrose Parré proposes this way, *viz.* to lay the Patient on the sound side, and apply an Emplaster of *Mastich* on the Fracture, and then to pull it off with Violence, that so the Rib be drawn up with it; and by repeating this Operation, he pretends to raise the ends which were depressed.

Some Practitioners apply Cupping-glasses on these Fractures, pretending to draw up the Bone by the help of the Flesh, which tumefies and rises up into the Glass, but both these Ways are ineffectual.

THE DRESSING. Lay a single Compress dipt in some Defensative on the fractured part, and lay two other Longitudinal Compresses over it, which must cross each other Salterwise; then stitch two Past-boards of the same Figure with themselves, to the two last Compresses, and lay another large Linen Compress with an oblong Past-board, and cover this again with a Compress; in the last place keep all on with the Bandage called the *Quadriga*.

To make this, take a Roller five Ells long, and three Inches broad rolled up at both ends, and apply the middle under the Armpit, and make an X on the Shoulder, then bring each end of the Roller over the Breast, and over the Back, so as to cross under the Armpit and make another X on the Shoulder; then bring again the two ends of the Roller one over the Back, and the other over the Breast, so as to make an X before and behind, and leave edgings on the Breast with both ends of the Roller descending till it be covered,

covered, and then fix it by a Circular turn round the Breast.

Another sort of Bandage may be made with a Napkin supported by the Scapulary, according to the Method delivered in the Operation of the *Empyema*.

THE CURE. *Fab. Hildanus* gives us the following Relation of his Process in the Cure of an Accident of this Nature. A certain Person having broke two of his Ribs near the Spine, the ends of the fractured Bones thrust out which he reduced, and after Embrocated the Part with *Oyl of Roses*, next he applied a Cataplasim made of *Flower of Barley*, *Powder of Roses*, *Balaustiums*, *Cypress Nuts*, *Galls*, *Tormentil*, and one whole Egg, and then laid on Compresses, Splints, made the necessary Bandages not too strait, and within a little time all the Accidents ceased. As soon as the Ribs were reduced, he gave the Patient a Decoction of *Self-heal* and *Water-cresses*, &c. and confined him to a good Diet, the next day he bled him, taking off the Dressings, and continuing to give him the forementioned Draught twice a day, for the space of eight Days, and upon the twelfth he recovered.

REMARKS.

There did not appear any External Contusion in the above-mentioned case, but the Blood came away by the Stools abundantly in great Clods, and this Flux continued for six Days without sensibly weakning the Patient.

C H A P. LXI.

Of a Fracture of the Breast-bone.

THIS Operation is a Reducing the Bones of the Sternum into their proper Situation.

THE CAUSE of a Fracture is ordinarily some Fall or Blow received.

THE SIGNS which demonstrate the Sternum to be fractured, are a Depression of the Part, a Palpitation of the Heart, a difficulty of Breathing, *Delirium*, and often times a Spitting of Blood. These Symptoms proceed from a Compression of the *Mediastinum*, Heart, Lungs, Nerves, and other Vessels.

The Sternum makes up the fore part of the Breast, and is placed in the middle between the Ribs and the Breast, the forepart of which it composes. It is of a porous Substance, and all of one piece in Adults, but made up of diverse ones in the *Fetus*, as we shall see hereafter. It is a little forked in its upper part where it has a *Sinus* on each side, to receive the Head of the Clavicle, which is Articulated with a Cartilage intervening. In its inner side there is a *Sinus* to give passage to the *Aspera Arteria*. The Sternum ends in a point, and throughout its whole length has lateral *Sinus's* which receive the Cartilages of the Ribs. At its lower Extremity it has a Cartilage fixed into a small Cavity of the Sternum, and this is called *Xiphoides*, from its resembling a Dagger. It is sometimes triangular, and at other times it is forked, and sometimes it is almost round; sometimes its point turns in, and when this happens it compresses the Stomach, and occasions Vomiting, sometimes it is perforated, for the transit of some Veins which go to the Breast. This Cartilage in some Bodies has been found to extend to the Navil.

The Sternum serves as a Rampart to the Heart, and helps to support the Breast and Ribs.

The Sternum of the Fœtus.

This is Cartilaginous till the fourth Month, and very rarely or never bony. The Number of Bones in the Sternum of Children is not certain; sometimes it is compos'd of seven,
and

and sometimes eight. Sometimes there is but four in a *Fætus* of nine Months, and there is never more than six, and there are some *Fætus* of five Months old, whose *Sternum* is compos'd of two Bones only.

In the sixth Month the *Sternum* is compos'd of four or five Bones, and sometimes there is no more than one. Some *Fætus* of six Months have the *Sternum* Cartilaginous. In the eighth Month it is compos'd of four or five Bones. In short, it is impossible to determine any thing certain concerning the Number and Situation of the Bones of the Breast; sometimes the lower Bones are larger than the upper ones, and sometimes they are ranged by one another in Parallel Lines.

THE OPERATION.

Let the Patient be laid on a Quilt on the Ground, and place some convex Body under him between his Shoulders, and let some Servant press on the sides of the Breast, which push out, and by this Extention the Bones may be reduced into their Natural Situation; or if this prove ineffectual, make an Incision, and lay the fractured Bone bare, that so you may raise it with the *Terebellum* or Screw. This must be exquisitely sharp, that it may enter the Bone upon touching it in the lightest manner imaginable; for if it were quite deprest, it would infallibly kill the Patient.

THE DRESSING. Lay a Triangular Compress wetted in Wine heated, and over that another thick Triangular Compress stitch to a Past-board of the same Figure, and let the point of this be applied downwards; in the last place, keep the Dressings on with a Napkin folded in two or three pleats, suspended with the Collar in the same manner as was directed in the Chapter of the *Empyema*, or you may use the *Quadriga*, described in the last Chapter.

THE CURE. Let the Patient lie on his Back, for if he should lie on his Side, the Ribs would compress the Bones of the *Sternum*, and if there be any Inflammation, which there seldom fails to be, let him lose some blood out of his Arm, and feed him with a good Nourishing Diet.

If there be a Wound it must be dress'd twice a Day, as the Nature of it shall require.

REMARKS.

Some Surgeons have had Sagacity enough to discover when there has been Pus lodg'd in the Cavity of the *Mediastinum*, and have dextrously discharged it by opening the *Sternum* with a Trepan.

C H A P. LXII.

Of a Fracture of the Vertebrae.

THIS Operation is a *Reducing the Fractured Bones into their usual and natural place.*

THE CAUSE is ordinarily some Blow or Fall.

THE SIGNS. When the *Vertebrae* of the Back are fractured, the Arm becomes Paralytick, and loses both Sense and Motion, the Patients Excrements come away involuntarily, and sometimes a Suppression of Urine ensues.

The Fracture of the Body of the *Vetebræ* is dangerous, because the Spinal Marrow which is the Origin of the Nerves is hurt upon these occasions. The Fracture of the Spinal Processes is not so dangerous, as that of the Body of the *Vertebrae*, because the *Medulla* is not hurt by it.

The whole number of *Vertebrae* make up one long Column of bones from the Articulation of the Head to the Rump-bone, and all this *Compages* is called the Spine, which name is given it from several pointed Bones.

The *Vertebrae* derive their Name a *Vertendo*, because the whole Body is turned to and fro upon them.

The Spine has a Curvature inwards from the first *Vertebra* of the Neck to the seventh, and then is convex outwardly from the first *Vertebra* of the Back to the twelfth, to enlarge the capacity of the Breast; then again it is as a Curvature inwards from the first *Vertebra* of the Loins, to the *Os Sacrum*, which is compos'd of several *Vertebrae* united together, and serves to enlarge the *Hypogastrium*, especially in Women who are formed by Nature for the bearing of Children.

The

The *Vertebrae* mutually receive, and are received by each other, which *Species* of Articulation is called *Ginglymos*, and are bound to one another by Ligaments and Cartilages. There are for the most part seven *Vertebrae* in the Neck, twelve in the Back, and five in the Loins; and the *Os Sacrum* is compos'd of several *Vertebrae* more, all which form but one Bone in Adults, which as the Child grows up lessens, and ends in a point.

The *Vertebrae* are bound together by a strong Cartilaginous Ligament. This Ligament hinders them from grating against each other, and by its flexibility yields to their Motion every way. The Spine is bended, extended, and turned round every way. The whole Spine has a large Hole from the top to the bottom, to give passage to the Marrow, and in the Juncture of the *Vertebrae* on each side they form a Hole for the Transmitting Nerves from the Marrow.

Each *Vertebra* is compos'd of its Body, and three sorts of Productions or Processes, viz. the Oblique, of which there are two Superior, and two Inferior, the Transverse to which the Muscles are fixed, and the third or Spinal seated behind in the midst of these which are very solid, and give a Denomination to the whole Column. Besides these, there are five *Epiphyses* or Appendages to each *Vertebra*, two of which make the two edges of the *Vertebra*, two of the Transverse Processes, and one of the Spinal ones.

Those who have a long Neck, most commonly have eight *Vertebrae* in it, and but eleven in the Neck, which lessening the Cavity of the Thorax, makes such Persons Phthisical; on the contrary, in short Necks there is often but six *Vertebrae*, and such are subject to Apoplexies. The Transverse Processes are perforated for the Transmitting Veins and Arteries, and have their ends forked for the implanting of Muscles. The Transverse Processes are likewise forked, short, and a little inclined.

The first *Vertebra* of the Neck is called *Atlas*, and receives and supports the Head on two small *Sinus*'s lin'd with Cartilages. This *Vertebra* has no Spines, lest it should hurt the two small Muscles called *Obliqui Inferiores*, when the Head is bound forwards. It has on its inner part a small superficial Cavity, which receives the Tooth-like Process of the second *Vertebra* of the Neck. At the lower part of the two Superior Cavities, there are two small round Eminences, from whence a Ligament like a Cord issues, which strongly binds the Tooth-like Process. The first *Vertebra* has

no more than six Processes, but on its fore-side it has a small Eminence which may be esteemed a seventh.

The second *Vertebra* is call'd *Dental* from its Tooth-like Process which enters into the first. *Hippocrates* assures us, that the antierour Luxation of this *Vertebra*, causes an incurable Quinsie. This is likewise call'd the *Axis*, because its Tooth-like Process serves as an *Axis* to the first *Vertebra*. The Superior Oblique Processes of this, are received into the Cavities of the first, and on this are made all the Rotations of the Head. The third *Vertebra* is not so tall as the second, and its Spinal Process is shorter. The fourth and fifth *Vertebra* of the Neck, have their Spinal Processes more inclined than the first. The Body of the seventh is larger than any of the Superior, and its Spinal Process is long and roundish at the end, and is very like the Process of the first *Vertebra* of the Back.

The twelve *Vertebra* of the Back, are larger than those of the Neck, but are not quite so solid, and are perforated by several Holes for the passage of Vessels. The first is called *Crista*, because it resembles the Crest of a Helmet, which is not unlike that of a Cock. The second is called *Axillaris*, because it lies near the Arm-pits, the eight lower are called *Costales*, because the Ribs are implanted to them. The Transverse Processes of the Back, are large, solid, round, at the Extremity, and a little crookt above. In each Transverse Process there is a small Cavity, and another on the upper part of the Body of the *Vertebra*, to receive the two small Condyls of the Ribs. The twelfth *Vertebra* differs in many respects; its Oblique Processes are roundish both above and below, in such a manner, that it is received by both Ribs; for the small Heads of the Oblique Processes, enter the Cavity of the Superior *Vertebra*, and there is no Transverse Process on the twelfth *Vertebra*, and the Motion of the Back is much freer on this twelfth *Vertebra*, than on any of the other; sometimes there are thirteen, and sometimes fourteen *Vertebra* in the back of large Men, but most commonly eight, and very seldom eleven.

Of the *Vertebra* of the Loyns.

Most commonly there are five *Vertebra* in the Loyns, and sometimes tho' seldom, there are six. The first is called *Renalis* from its Vicinity to the Kidneys. The *Vertebra* of the Loyns are more large and porous than those of the

the Back. Their Transverse Processes are strait, long, slender, and parallel, resembling so many small Ribs. Their Spinal Processes are strait, flat, large, and roundish at the end. The Motion of the Trunk is principally made on the *Vertebra* of the Loins. And since their Transverse and Spinal Processes are parallel, they cannot compress or grate against one another; on the contrary, there is but a small space between the Transverse Processes of the Back, and their Spinal Processes are inclined to, and touch each other exactly.

Of the Os Sacrum.

This Bone is Triangular, concave within, and convex without. It has several small Holes which transmit the Nerves of the Spinal Marrow, and is joyn'd to the *Os Ilium* by a sort of Ingranure; it has several small Processes at its Extremity, which makes it uneven. In its lower part there is a small Cavity, to which the first of the small Bones which compose the Rump is implanted. The *Os Sacrum* is compos'd of five, six, and sometime seven *Vertebra*, which are so united, as to make up one large Bone, which in its Figure appears like an Isosceles Triangle, and has ten large Holes, viz. five on each side, for transmitting Nerves to the Thigh.

Of the Hanch or Hip-bones.

There are two Bones of this Name, which are seated one on each side of the *Os Sacrum*. This Bone is compos'd of three lesser Bones in the *Fetus*, but in Adults it is but one distinguished into three parts, the first of which is called the *Ilium*, because it receives the *Ilion* into its Cavity. This part of the Bone is large, and its Figure is almost semicircular, being a little convex and unequal in its surface, and something concave in its inner. It is fastned to the *Os Sacrum*, by a strong Membranous Ligament, its Edge and Circumference is called its Spine, and it is expanded in Women more than Men, because they are made to bear Children. The *Os Pubis* makes up the second part of the Hanch-bones, and this has a large Oval Hole which is exactly stoppt by a Tendinous Membrane, to which the *Musculi Obturatores* are implanted, and in the upper part of the Hole there is an oblique Sinuosity, thro' which the Spermatick Vessels, and the Crural Vein and Artery pass.

The third Bone which composes the Hanches is called *Ischion* or the Hip-bone, in which is the *Acetabulum* or great Cavity which receives the Head of the Thigh-bone. The *Ischion* has three parts, its Spine on the sides round the *Acetabulum*, a great irregular Process call'd its *Tuber*; and lastly, a *Sinus* between the Spine and the Tuberosity, for the passage of the Obturator Muscles.

Of the *Vertebrae* of the *Fœtus*.

The Spine of the *Fœtus* makes a Circle whilst it is in the Mothers Womb, because the Head most commonly is between the Knees, but when the Child is once born, it recovers its Natural Situation by being swadled in its Blankets.

The Spinal Processes are wanting in the *Vetebrae* of the *Fœtus*, for these would be apt to tear the Membranes, and hurt the Mother in the Birth. The first Rudiments of the Spinal Processes which are visible, are certain, small, red points which increase by degrees, but do not rise to any height, while the *Fœtus* continues in the Womb. There are no Transverse Processes, and there are only Cartilages in their place, which have a Hole on their sides for the transmitting of the Vessels. The Body of each *Vertebra* is made up of three small Bones, *viz.* the Body it self, and two other small Bones seated on the back part. These two Bones are divided by an intervening Cartilage; and besides this, there is another Cartilage which separates them from the Body of the *Vertebra*.

In the third Month there are two small Bones which form the four first *Vertebrae* of the Neck, but their Body is not bony so soon. The sixth *Vertebra* of the Back begins to Ossify by its Body; the Ossification of the *Vertebra* rising from below up to the fifth *Vertebra* of the Back, and descending to the third Bone of the *Os Sacrum*. In the fourth Month the Bones of the *Os Sacrum* are bony quite to the Rump-bone. At that time the third or fourth *Vertebra* of the Neck is bony. The *Atlas* and the Dental *Vertebra*, as yet have no Body. In the fifth and sixth Month, there is a distinction of several Points in the *Os Sacrum* where the Ossification begins; the Body of the second *Vertebra* of the Neck is entirely bony, its Tooth-like Process is Cartilaginous, and the first *Vertebra* of the Neck, as yet has no Body.

The Ossification of the Tooth-like Process of the second *Vertebra* of the Neck, begins in the seventh Month, and there is a small bony point as big as a pins Head on the Body of the first *Vertebra* of the Head. All *Vertebrae* begin to grow about the eighth or ninth Month.

Of the Os Sacrum in the Fœtus.

About six Months after Conception, the two first *Vertebrae* of the *Os Sacrum* are made up of five Bones, viz. the Body of the *Vertebra*, two Wings and two Bones, which derive their Origin from the Juncture of the *Os Sacrum*, with the *Ossa innominata*. The three lower *Vertebrae* of the *Os Sacrum*, are made up of three distinct Bones, but in the ninth Month they are compos'd of five Bones, as well as the two upper *Vertebrae*.

Of the Ossa innominata of the Fœtus.

In the tenth Month the *Ossa innominata* are made up of one Membrane, whose Ossification begins with a small point, which appears near the *Acetabulum*. The *Os Ilium* becomes bony on the third Month, its Figure is Semicircular, and the Circumference of the Bone is Membranous, as well as that of the *Pubis* and *Ischion*. The Ossification of the *Ischion* begins in the fourth Month with a small white point.

The *Os Ilium* is perfectly formed in the fifth Month, and at that time is pretty large, and the *Pubis* becomes bony on that side where it is joyned to the Cavity of the *Ischion*. The *Ischion* or Hip-bone, and the *Os Pubis* or Share-bones by their Junction, form a sort of Box which receives the Head of the Thigh-bone, and this Bone encreases until the ninth Month, at which time they are joyned by several large, soft, intervening Cartilages. This Tendinous connexion helps the Situation of the *Fœtus* in the Womb where it is round, and by yielding hinders the Child from receiving any hurt in the Passage.

THE OPERATION.

Since the Spine cannot be fractured, unless there be a Depression of the Bone, place the Patient on his Belly, for the better making an Incision on the fractured place, and taking

taking out those Splinters which press or prick the Spinal Marrow and Nerves.

If only the Processes of the *Vertebrae* are broken off, place the Patient on his Back, and so reduce them as conveniently as you can.

THE DRESSING. If the Body of the *Vertebra* be hurt, lay on a Compress dipt in warm *Wine* or *Oxycrate*, and keep it on with the Napkin and Scapulary, the manner of applying which, you may find in the Chapter of the *Empyema*. Take care not to straiten the Bandage too much, for fear of pressing down the fragments of Bones which you have raised on the Spinal Marrow.

If it be the Spine of the *Vertebra*, which is broke, lay a small Plate of Lead with a Compress on each side, to retain the Fractured Bone in its place, and lay over it a Compress dipt in some good Defensative, and keep this on with the Napkin and Scapulary.

THE CURE. When the Bones are reduced, let the Patient lie on his Side, and feed him with Meats of good Digestion, and Roasted Flesh.

If any Incision has been made to restore the Bones to their place, dress this like all other contus'd Wounds; that is, digest, deterge, and cicatrize it.

R E M A R K S.

Fabr. Hildanus, Cent. 1. Obs. 45. relates, that a young Man being Hunch-backt, and Asthmatick from his Cradle, died of a *Phthisis* at 16 years of Age. Upon opening of the *Cranium*, he found the *Crista Galli* very high, and so large, that it cover'd the whole *Os Cribrosum*, and all the small Holes being stoppt, the *Ossa Plana* grew so high, as to extend to the *Septum Narium*, and he conjectures this last Accident was the cause of his Gibbosity, since the *Pituita* not being discharged by the Nose, must necessarily lodge it self towards the Spine; and for this reason the *Vertebrae* and their Cartilages by the constant Fluxion of this Humidity, must inevitably be relaxed and protruded out, and form this Bunch; all the *Vertebrae* of the Spine, *Os Sacrum* and *Os Pubis* being as soft as Wax. The sixth, seventh, eighth, and ninth *Vertebrae* were consumed by the *Caries*, especially the three last, of which nothing remained besides the exterior Circle, and the parts which were missing, were found in the Lungs.

C H A P. LXIII.

Of the Fracture of the Rump-Bone.

THIS Operation is a Restoring the Fractured Bones of the Rump, to their Natural place.

THE CAUSE of a Fracture in this part, is most commonly some Fall.

THE SIGNS of a Fracture of the Rump, are a Suppression of the Excrements, a Paralysis of the Sphincter which proceeds from the Coccyx being deprest by a Fall, and compressing the Rectum and its Sphincter, to which add the Extremity of the Pain.

The Rump-bone is placed at the Extremity of the Os Sacrum, and is composed of four or five small Bones, and two Cartilages joyned together, which form a sort of a Tail crookt inwards. The first Bone of the Rump which joyns to the Os Sacrum is the largest, and has two small Transverse Processes, and two more above them.

The Rump-bone keeps up the Rectum. This part often endures great pain in Womens Labour, because the Child thrusts it very much back in the Birth.

The OPERATION.

To reduce a Fracture of the Rump-bone, put the forefinger of the right Hand up into the Anus, having first pared the Nail very close, and then place the Fingers on the outside on the Fracture, and by the help of both Fingers, put the Bone into its place. But observe here, that this Bone for the most part is rather luxated than fractured.

THE DRESSING. Put some Body in form of a Suppository into the Anus, to keep the Fractured Bones in their right place after they are reduced, and lay on a Compress wetted with some Defensative Liquor; and keep this on with the T, or double T, or the Filler with four Tails and the Collar, which Bandages we have described in the Chapters of Lithotomy, and the Fistula in Ano.

THE CURE. Let the Patient lie on his Side till the Bone be re-united, and when he begins to sit, let it be on a Chair with a Hole in the midst, for fear of compressing the Bones.

REMARKS.

The Rump-bone is Cartilaginous in the eighth Month, and the two points in its inner part whence its Ossification begins, do not appear till the ninth Month.

The *Coccyx* in Men is sometimes prolonged, and forms a Tail like that of other Animals, as *Diemerbroek* observes, who assures us, he had seen a New-born Infant with a Tail half an Ell in length; and if we may believe *Pliny*, there are Men with hairy Tails in the *Indies*.

Dr. Harvey in his Book of the Generation of Animals tells us, that one of his Friends who had been in the inland parts of the Isle of *Borneo*, had seen Wild Men with Tails of a Foot in length.

CHAP. LXIV.

Of a Fracture of the *Os Ilium*.

THIS Operation is Reducing the Fractured Bone to its right position.

THE CAUSE of this Fracture is some Blow or Fall.

THE SIGNS. When the Spine of the *Os Ilium* is broke, there is a Stupor of the part which extends to the Leg, and proceeds from a Hurt of the Nerves which pass that way.

The OPERATION.

If the *Os Ilium* be broke, and some Splinters of it run into the Flesh, make an Incision and take them out, and snip off the inequalities of the Bone with a pair of Pincers, or reduce them into their proper place if they adhere to the Bone or *Periosteum*. In making the Incision, take care not to hurt the Vessels. If there be no Splinters, reduce the Bone in the most convenient manner with your Fingers.

THE DRESSING. Lay a large Compress dipt in some good Defensative on the Bone, and keep it on with the Bandage named *Spica*, which is described in the Operation of the *Bubonocèle*. This Bone is united in 25 or 30 Days.

R E

REMARKS.

* *H. Arniseus* in a Letter to *Fab. Hildanus* exrant in his *Cent. of Epistles Ep. 45.* tells him, That in Dissecting the Body of a certain Woman after Labour, he found not only a Divulsion of the *Os Pubis*, but the *Ossa Ilii* likewise were separated from the *Os Sacrum*; and he pretends that the reason why the German Anatomists cannot find the Bones separated in Women after the Birth is, because they defer their Execution till the sixth or seventh Week after their Delivery.

THE CURE. Let the Patient forbear lying on the Fractured Side, and let him use a nourishing Diet, especially roasted Flesh.

CHAP. LXV.

Of the Fracture of the Shoulder-bone.

THIS Operation is a Restoring that Bone to its proper place.

THE CAUSE of the Fracture most commonly is some Fall or Blow.

THE SIGNS. The Fracture of the Shoulder-bone, may be perceived by a crashing of the Bone, in moving up and down the Arm, and if the ends of the Bones do not meet, the Arm is distorted, appears shorter than the other, and the Patient endures a great deal of Pain.

The first Bone of the Arm is called the *Humerus* or Shoulder-bone, and is solid, long, and unequal, and has a Head in its upper Extremity, which is cover'd with a Cartilage, and received into the *Sinus* of the Head of the Shoulder-blade. This Bone has two Productions, the Exterior of which is small, and arm'd with a Cartilage, and receives the *Radius* or lesser Focil, the Inferior has two *Sinus's*, and resembles a Pulley, with which the Elbow or greater Focil is Articulated, and there is a small *Fissure* on the fore-part of the larger Head of the *Humerus*, through which one Head of the *Musculus Biceps* passes, as a Rope on a Pulley.

* *Fab. Hildanus* in his Reply to the Gentleman, Ep. 45. denies that he had ever known the former happen in the most difficult Births, and thinks the latter if true, happens but seldom, notwithstanding his and *Bauhinus's* Observations.

Of the Bones of the Hand, or lower part of the Arm.

These Bones are two in number, the *Cubit* and the *Radius*.

The *Cubit* or greater Focil is articulated with the *Humerus*, and has a large Process on that side, in the midst of which are two Cavities with an Eminence between them, which forms a sort of *Ginglymus*. The posterioir Process at the Head of the *Cubit* is termed *Olecranon*, and on this it is that a Man rests when he leans on his Elbow. The lower end of the *Cubit* is round and slender, and has a small protuberance from whence several Ligaments arise.

The *Cubit* has two sorts of Motions, *viz.* Flexion and Extension, and has one Protuberance, and two Cavities, for the Reception of the two Protuberances of the Shoulder-bone. The jutting out of the *Cubit* is received in the Cavity of the Shoulder-bone, on which it turns after the manner of a Pulley.

The *Radius* accompanies the *Cubit*, but ends before it, and is Triangular through its whole length. It has a small round Head in its upper part, at the end of which there is a Cavity for receiving the Bones of the *Carpus*, and on this the Motion of the Wrist is made. Besides this, there is another small Cavity which turns on the inferiour Protuberance of the *Cubit*. When the *Radius* is turned inwards, the Hand is directed by it, and this is termed Pronation; and when it is moved outward, the back of the Hand is turned down, and this is called Supination. The *Cubit* is thick in its upper part, and slender towards its lower; the *Radius* on the contrary is more slender above, and thicker below. The *Cubit* receives the *Radius* above in a small Cavity, on which the *Radius* is turned round, and below the *Radius* receives the *Cubit*. These two Bones touch at their extremity, and leave a space all along their middle, in which there is a Membranous Ligament which connects one Bone to the other.

Of the upper and lower Bones of the Arm in a Fœtus.

In the second Month these Bones are entirely Cartilaginous, having only three white streaks in the middle of them. The uppermost, which is the beginning of the *Humerus* is the longest, and those which form the *Cubit* and *Radius*,

dius, are ranged one against the other, and the middle of those Bones is more solid than their Extremities.

About the third Month the upper and lower Bones of the Arm are articulated together, and the Cubit and *Radius* which cohered before, begin to separate in their midst, and continue to touch only at their Extremity. About the seventh or eighth Month, the small Protuberances and *Epiphyses* are not discernible, but shortly after in the ninth Month, they become as visible as they are in the Bones of Adult Persons. The *Humerus* in the *Fœtus* is strait, round, and long, but in Adults it is something bent.

THE OPERATION.

Place the Patient on a Stool, or let him sit in his Bed, and let one Assistant take hold of his Arm above the Elbow with both Hands, and another stand behind to take hold of the upper part of it with both Hands, and let both of them draw together; and at the same time let the Surgeon bring the two ends of the Bone together, and adjust them by compressing the part around with the palm of his Hand, till he finds there is no inequality.

If after the Fracture the two ends of the Bones continue together, yet a slight Extension is necessary, for fear lest the Surgeon break off any of the *Asperities* at the end in pressing them to a Level. After the Bones are reduced, let the Assistants continue to hold the Arm, extending it a little till the Dressing be made.

THE DRESSING is made with a simple Compress dipped in some Defensatives to prevent the Inflammation from extending it self to the part. When this is laid on take a Roller above two Inches broad, and two Ells in length, rolled up at one end, and with this make two Circular turns about the Fracture, and bind the part strait enough to keep the Bones in their proper place; then bring up the Roller ascending lengthways of the Arm with little Edgings, which must not be altogether so strait as the turns about the Fracture, and when the Roller is spent, pin it at the upper end of the Arm. When this is done, take another Roller of the same breadth and length with the former, and begin to apply it on the Fracture, making three Circular turns about pretty strait; but in this the turns of the Roller must be made to reduce those Muscles which the first turn had drawn a little aside, then bring down the Roller to the bottom of the

the Arm leaving small Edgings, and bring it over the Flexure of the Elbow, but not so as to bind the Joynt, then bring it up again leaving little Edgings, and pin it where it ends. After this, you must have four Longitudinal Compresses of a competent thickness, and almost as long as the Part which is hurt, and each of these must be covered with a Past-board, or a very thin Splint made of a very thin Deal; in the next place take a Roller as before, but something longer, and apply this near the Elbow, and make three Circular turns about the Fractured part, and so bring the Roller up to the top of the Arm, still leaving Edgings; next bring it under the Arm-pit, and about the Body, and so fasten it. Besides this, you may if you please lay on two Past-boards of an equal length with the Part, and encompass the Arm with these, and tie them with three Ribbons, beginning with that in the midst; and in the last place, suspend the Arm with a Sling.

THE CURE. If the Patient keep his Bed which is most adviseable for him to do, it will be sufficient to repose his Arm half bent on a Pillow, without using any Sling at all. If it be not a complicate Fracture, the best way is to keep the Bandage on as long as may be; nay, not to undoe it at all till the Cure be compleated, except some Accidents, as Pain, Inflammation, or Itching shall require it, or it slacken of it self, and indeed the less any Bones are stirred, the sooner they will unite. However the Patients Arm must be moved to and fro on the Joynt, for fear lest the Bones cement together, and the part lose its Motion.

During the Cure, let the Patient be fed with Nourishing Meats, such as roasted Flesh.

R E M A R K S.

Fabr. Hildanus, Cent. 2. Obs. 46. tells us, that a certain Person of threescore years of Age, had a Pain in the Articulation of the Right Elbow, for which he used no other Remedy besides keeping his Arm still in Bed, but upon rising, endeavouring to draw on his Glove, he broke his Arm five or six fingers breadth above the Elbow, and upon removing the Dressings about three days after, there was found a second Fracture near the Joynt it self, notwithstanding which, the Patient did positively deny that he ever had any Venereal Distemper.

The same Author, *Cent. 3. Obs. 81.* tells us, that a cer-

rain very Aged Person having broke his Arm between the Wrist and the Elbow, and having by reason of ill management, a great Pain and Inflammation, with a considerable discharge of Matter which hindred the re-union of the Bone, had a *Callus* grew at each Extremity, which compos'd a sort of Articulation, however the Patient could not move the Bone on it without the help of his other Hand.

C H A P. LXVI.

Of Fractures of the Bones of the Hand.

THE Operation is *the Reducing the Fractured Bones to their Natural place.*

THE CAUSE. Fractures in this Part most commonly are occasioned by some Blow or Fall.

THE SIGNS. Fractures of this Part are discovered by the Deformity, and by the crashing of the Bones when they are stirred.

The Hand is compos'd of the *Carpus* or Wrist, *Metacarpus* and the Fingers.

The *Carpus* or Wrist is made of small Bones dispos'd in two Ranks, each of which consists of four Bones. All these Bones are bound together by strong Ligaments, and have a polite slippery Cartilage on them. The first Range of Bones jet out, and are received into the Cavity of the *Radius*, and on this Articulation all the Motions of the Wrist are made. The small Bones of the Wrist are even without, and uneven on the inner side.

The four Bones of the *Metacarpus* are long, slender, and unequal in their length, they have Processes above and below, and touch at their Extremities, leaving Spaces in the middle, which are filled by the *Musculi interossei*. These Bones are convex and smooth in the Palm of the Hand, and are something concave inwardly, and something of a triangular Figure, they are straitly bound to the second Range of the Bones of the Wrist, and seem to make but one Bone with them: In their upper part they are articulated with the small Heads of the first Range of Bones of the Fingers.

The five Fingers are each compos'd of three Bones which are convex, and something hollow in the middle for the fastening the Sheath-like Ligament, through which the Tendons

of the Flexors of the Hand pass. The first Range of Bones in the Fingers, are articulated with the Bones of the *Metacarpus* by *Arthrodia*. The Bones of the Fingers are articulated by *Ginglymus*, and are fifteen in each Hand.

THE OPERATION.

To make the Extention, let one Assistant hold the Patients Arm above the Wrist, and another by the Fingers, and whilst both draw it, take care to reduce the Bones into their place.

If the Fingers only are broke, reduce them separately one after another.

THE DRESSING. If the Bones of the *Carpus* or *Metacarpus* only are broke, lay a Compress dipt in some Defensative on the Fracture, and another pretty thick Compress in the Hand, making the Bandage called the *Half Ganslet*. To make this, take a Roller of four or five Ells long, and an Inch and a half broad rolled up at one end; then begin to apply it on the Wrist, making three Circular turns about it; then bring the Fillet to the *Metacarpus* ascending spirally, next bring it obliquely over the Hand, and then between the Thumb and Fore-finger, and so into the Hand, and then over it, and make it cross on the first turn, then make a Circular turn about the Wrist, and bring it again over the Hand leaving an Edging; next make a turn round the Wrist, and bring it over the Hand leaving an Edging, and proceed in this manner till the Hand be quite covered by the Edgings; then lay on a Compress sticbt to a Past-board on the back of the Hand, and another on the inside, both which must be of a Figure adapted to the part. These Past-boards must be kept on with the Head of the Roller, by covering them in the same manner as the Hand, and when this is done, bring the Fillet spirally up the whole Arm leaving small Edgings, and pin it above the Elbow, forbearing to cover that with the Circumvolutions, as was noted in the Chapter of the Fracture of the Arm.

If the Fingers are Fractured, each of them requires a particular Bandage, and must be bound strait almost in the same manner as the Arm.

THE CURE If there be no Wound, keep the Dressings on till the re-union be made, unless some Accident require them to be removed; but if there be any, dress it after the manner practised in Contusions.

C H A P. LXVII.

Of the Fracture of the Thigh.

THIS Operation is a Reducing the two ends of the Fractured Bones to their Natural place.

THE CAUSE of the Fracture is some Blow or Fall.

THE SIGNS. When a Fracture is near the Head of the Bone, it is very difficult to know it, and it is easily mistaken for a Luxation; and for this reason not being reduced, the Patient continues lame all his Life-time; but if the Fracture be in its middle, and the ends do not meet, there is a visible Deformity and Inequality, and the Patient cannot stand or stir his Thigh, and it is shorter than the other. When the ends of the Bones meet, a crasping may be heard.

There is but one Bone in the Thigh, which is something convex before, and curve behind, and the Artist must have regard to this curvature, because if the Bone should be set straight, it would be longer than naturally it ought to be, and the Patient would become Lame.

This Bone has a large round Head, covered with a smooth, slippery, Cartilage. This is received into the *Acetabulum*, and has a round Neck something inclined. At the end in the Center of this Head, there is a Ligament which is fixed to the Center of the *Acetabulum*. Beneath on the hinder part of the Neck there are two Processes, which from the use they have in the Rotation of the Thigh-bone, are called *Trochanters*; the upper of these is larger, and something irregular, and is termed the greater, and the lower the lesser; besides these on the hinder part, there is a long Process for the Implantation of divers Muscles.

The lower part of the Thigh-bone is larger, and has two *Condyls* which are a little curve on the inside. These Protuberances are roundish at the end, and are covered with a large, smooth, Cartilage; there is a Process between these two, and a large Cavity which receives the Protuberance of the *Tibia*, and makes a sort of Hinge. At the bottom of the Thigh on the fore-part there is a small Cavity, into which the *Rotula* is fixed. The Thigh-bone in the *Fetus* continues Cartilaginous the second Month.

The

The OPERATION.

Place the Patient on his Back, and let one Assistant take hold of the Thigh above the Knee, and another grasp its upper part, and let both these at once draw the Part strongly to bring both ends of the Bone together; and whilst they do this, let the Surgeon reduce them, and bring them to a level.

If the two ends continue together, yet some sort of Extension is necessary, for fear of breaking off the extremities, and by this means hindring the Re-union of the Bone.

If the Fracture be near the Head of the Bone, there is no room to take hold of it, and therefore a Napkin must be put between the Patients Thighs, and one Assistant must draw this, whilst the other takes hold of the Thigh a little above the Knee, and so makes the Extension. If this cannot be conveniently enough done with the Hands, the Surgeon must make use of Girths, or if these be not strong enough, of Towels.

THE DRESSING. Wrap the Fracture round with a large simple Compress dipt in Wine heated, and lay a good Compress three quarters of an Inch thick all along the hollow part of the Thigh to preserve its Curvature; for if it were streight, it would be longer than it ought to be, and the Patient would be lame all his Life-time.

The Bandage must be made with three Rollers about three Inches broad, rolled up at one end. The first Roller must be three Ells in length, and the second four. The way of applying the first Roller is thus; First make three Circular turns about the Fracture, then bring it up the Thigh spirally, leaving small Edgings, and fasten it round the Body; when this is done, apply the second Roller on the Fracture, and make two Circular turns, and bring it down the Thigh spirally leaving small Edgings, and so continue (without covering the Knee) to descend all along the Leg, and bring the Roller under the Foot like a Stirrup, and reascend up the Leg, leaving small Edgings, and pin it where it ends. If you please you may end below the Knee without proceeding farther; when this is done, apply a graduated Compress at the bottom of the Thigh, to keep it equal all along. In the last place, lay four Longitudinal Compresses round the Thigh, and let each Compress be an Inch and a half broad, and almost as long as the Thigh

it self, and cover each of these with a Past-board or a Splint of Deal, which must be very thin and pliant, and keep these Compresses on with the third and last Roller; in the applying which, you must begin beneath and rise up by small Edgings, and so embrace the Dressings together with two large Past-boards, which must be tyed with Ribbons, and not lie over one another. You must put a small Soal with a Quilt under the Patients Leg, to keep it right with the Toes up, and a small Roll of Linen under the Heel, provided it be not swoln; for in this case there is no need of it, and in its stead with a Napkin folded in three pleats, and rolled up at both ends, and lay this under the Leg to prevent the Heel from being comprest; let there be one Ribbon stitcht to the end of the Bolster, and another on each side to support the Foot, and tie these to the Junks in which the Foot is laid.

These are made in the following manner, take two sticks as long as the Patients Leg and Thigh, and wrap them in straw, tying it round with a Ribbon, then roll these two sticks together with the Straw in which they are wrapt in a Cloth, and lay the Leg and Thigh together with the Dressings between them. Before you lay the Patients Thigh between the Junks, lay three Ribbons over, and as many under the Leg, and place the Junks on these. And observe here to make that Roll of Junks which lie on the out-side, at least three Inches longer than that on the inner; before you tie the Junks, you must place a Bolster on each side the lower part of the Leggs, about the Ancles, in the upper part of the Leg near the Knee, in the lower part of the Thigh above the Knee, and in the upper part of the Thigh under the Groin, that so all the hollowness and inequalities may be filled up, and the part may lie easily. Besides these, lay a pretty thick Compress lengthways on the Leggs and Thighs. When the Junks are thus rolled up close to the Leg and Thigh, begin to tie the Ribbon in the midst, and so proceed to the rest. The knots must be made on the out-side of the Junks, the Ribbon at the upper end of the Pillow must be tyed to that next the Knee, and the Ribbons which are on the side of the Pillow, must be brought a-cross each other, and pinned to the Roll of Junks about the middle of the Leggs; when this is all done, place the Leg on a Pillow with the Foot a little raised, and place a Cradle over it to keep off the Bed-cloths.

In the Hospital of the *Charite des Hommes*, they use Boxes matted within, and by this means they pretend to keep the Leg stable, and in a good Posture.

THE CURE. Let the Patient lie on his Back, to keep the whole Leg equally extended; and when there is a necessity of making the Patients Bed, let two lusty Fellows place their Arms under his Burtocks, and support his Body with their two other Hands, whilst another puts both his Hands under the Dressing to lift up his Leg and Thigh, and then carry him to Bed or Table with a Quilt on it, and cover him whilst his Bed is made.

If there be no Wound, keep the Dressings on as long as may be without removing them, and feed the Patient with Meats easie of Digestion, as Fowl, Roasted Flesh, and good Broths.

REMARKS:

Avicen and several other Authors pretend, that the Thigh can scarcely be so reduced, but that the Patient will remain lame, especially if the Fracture be in the upper part, because the Muscles and Tendons are very strong, and the Part is so Fleishy, that a Bandage can scarce retain it.

In the *Miscellanea Curiosa*, *Obs.* 25. there is a Relation that a Woman of a good Habit of Body, and five Months gone with Child who broke her Thigh, and having care taken of it without any Success, was at last delivered of a found Child, and in about a Month after, was perfectly cured of her Fracture.

Fabr. Hildanus, *Obs.* 68. tells us, the Wife of a certain Senator of *Bern* having broke her Leg, could by no means be cured till she was delivered about 40 Days after. These Observations shew, that in the time of Pregnancy, Nature employs most of the Nutritious Juice in the perfecting of the *Fetus*.

C H A P. LXVIII.

Of the Fracture of the Rotula.

THIS Operation is the *Reduction of the Bones of the Rotula into their Natural place.*

THE CAUSE of this Fracture is most commonly some Blow or Fall.

THE SIGNS. This Fracture is discerned by a Separation of the parts of the Bone. If the Fracture be Transverse, the Muscles sometimes draw the Fragment pretty high under the Teguments of the Thigh. When this happens, there is great reason to fear the Patient will continue Lame.

The *Rotula* is a small round Bone placed on the Articulation of the Leg and Thigh, and is covered with a smooth Cartilage, which disposes it for Motion. It is a little convex outwardly, and articulated by *Ginglymus*, and covered with Ligaments, and the Tendons of the Muscles. This small Bone serves as a Pulley to the Tendons of the Muscles which pass over it.

The *Rotula* of the *Fœtus* in the Womb begins to appear on the fourth Month, and continues Cartilaginous till after the Birth.

The OPERATION.

If the *Rotula* be Fractured transversely, the upper part will be drawn up; and therefore to reduce it, place the Patient on his Back, and let some Assistants extend the Leg, and then bring down the Bone, and with your Thumbs adjust it to that which remains below, and here observe never to take off both Thumbs together, for then the piece will infallibly fly out of its place.

If the *Rotula* be fractured lengthways, there is no need of making an Extension, because the Bones do not start far from one another, and it suffices to thrust them into their place, and then make the Dressing.

THE DRESSING. If the Fracture be Transverse, the way of Dressing it is in this manner; take a Roller of three Ells long, and about an Inch and a half broad rolled up at
both

both ends, apply the middle of this Roller above the *Rotula*, and make two Circular turns, then bring it down under the Ham and cross it there, then bring it beneath the *Rotula*, and make a Circular turn; next bring it up, and let it cross again below the Knee, then bring it up and make a Circular turn there, and continue thus bringing it up and down, and crossing under the Knee, and making Circular turns above and below, till the Joynt be covered with the Edgings, and then pin the end of the Roller either above or below the Knee; when this is done, lay the Leg in the Junks in the same manner as was directed in the foregoing Chapter.

If the *Rotula* be fractured lengthways, take a Roller of about three Ells long, and two Inches broad rolled up at both ends, and having a slit in the midst, apply the middle of this on the middle of the Fracture, and pass one of the Heads of the Roller through the slit in the middle, so that this slit be in the middle of the *Rotula*; then draw the Roller pretty strait to keep the parts of the Bone together, and cover the *Rotula* with several Circumvolutions, leaving all along small Edgings; and lastly, keep all steady by several Circular turns about the *Rotula*; and when this is done, lay the Leg in the Junks.

THE CURE. Embrocate the contiguous parts with good Defensatives, to prevent a Fluxion or Inflammation, and do not remove the Bandage till the Cure be perfected, or it slacken of its own accord, or some accident require it, and let the Patient feed on Roasted Flesh, or Nourishing Liquids.

R E M A R K S.

Fabr. Hildanus, Cent. 5. Obs. 88. relates, that a certain lusty Fellow of 40 years of Age, had a Transverse Fracture of the *Rotula* with a great Contusion, but no Wound. Though the Patient was treated according to the Rules of Art from the very first, yet nevertheless he was afflicted with great Pains, and several other bad Symptoms; and after these were removed, and the Cure at length compleated, he continued Lame, his Thigh was very weak, he could not walk without a great deal of trouble, and had the greatest difficulty in the World to lift up his Leg in going up any Ascent.

The same Author relates the History of a Captain who had his *Rotula* fractured by a Musker-shot, upon which a great Inflammation and a *Meliceris* ensued, which afflicted him so much as to obstruct Digestion, and ruin his Health, and after some time proved the cause of his Death. These Instances demonstrate to us of how bad consequence Hurts of the *Rotula* are.

C H A P. LXIX.

Of a Complicate Fracture of the Leg.

THIS Operation is the Reducing the Bones into their Natural place.

THE CAUSE of Fractures in this Part, are some Blow or Fall.

THE SIGNS. There is a visible Wound, the crashing of the Bones may be heard, and the Part is sensibly shorter than it ought to be.

If the *Tibia* only be broke, the other supports it, and hinders it from jetting out; but if both Bones are broke, they very often ride on one another, and then the Leg is shorter than it ought to be.

There are two Bones in the Leg, the *Tibia* or larger Focil, and the *Fibula* or lesser. The *Tibia* forms the fore-part of the Leg, and has a Protuberance at its upper end, which is received into the Cavity of the Thigh-bone. Besides these, there are two long *Sinus*'s which receive the Head of the Thigh-bone, which by reason of the Cartilages which line them appear very long. M. *Sanguerdus* has observed another *Sinus* in the fore-part lying between the two former, which are separated by a prominence, at the Extremity of which, there springs a Ligament which is implanted into the Thigh-bone. This Bone is Triangular, and its anterior part which is long and sharp, is called its Edge or Spine; at its lower end it has a Process which makes the internal Ankle; and in the last place, it is articulated with the *Astragalus* by *Ginglymus*.

The *Fibula* is much slenderer than the *Tibia*, and is placed in a manner behind the Leg; it has a round Head at its upper End, which terminates a little below the Head of the

the *Tibia*, but its lower end is extended below the *Tibia*. The *Fibula* is bound to the *Tibia* by common Ligaments.

The two Foci of the Leg spread from each other, and leave an interstice in the midst, which is filled with a large loose Ligament, and some Muscles which descend all along the Leg; and for this reason in Amputation of the Limb, it is usual to divide these by a sharp, streight Knife, to prevent the Accidents which might follow, if they were left to be torn by the Teeth of the Saw.

The *Tibia* continues to be Cartilaginous on the second Month in the *Fetus*, and the *Fibula* do's not appear distinctly at that time, but in the third Month they are bony and visible enough.

THE OPERATION.

Place the Patient on his Back, and let an Assistant take hold of his Leg above the Foot, and another below the Knee; and if both Bones are broke, and ride one over the other, let them make a strong Extension, which is not required to be so great, if one of the Bones remain entire, and then with both Hands bring the Bones even.

THE DRESSING. When the Bones are reduced, dress this like other contus'd Wounds, applying Pledgits with good Digestives, and laying on an Emplaster, and a simple Compress over that wetted in Wine heated. When the Wound is dress'd in this manner, bind up the part with the Eighteen tail'd Bandage in this manner.

Take a large piece of Linen Cloth as long as the part, and broad enough to go round it; when it is made up into three Pleats, cut this Cloth into three parts equal on every side, leaving about three Inches plain and undivided in the middle to support the Leg, and stitch it along the whole length of the undivided part. The several ranges of these Tails must be all gradually longer and shorter than each other, viz. the inmost shortest of all, the middle something longer than that, and the utmost longest of all; when the Bandage is laid under the Leg lay a Compress under it to prevent the Pus from staining it.

When things are thus prepared, apply the Tails on the Fracture, raising them one on one side, and the other on the other, and crossing them, and so continue to raise the Heads of the first Range, next lay two Compresses on each side the Leg as long as it self; then proceed to raise and cross

cross the second in the same manner as the first, beginning with those which lie over the Fracture; and in the last place, do the same with the third Rank, and make the remaining part of the Dressing with Junks, Splints, Boulsters, Soals, Pillows, and Ribbons, as was directed in the foregoing Chapter.

THE CURE. Dress the Fracture twice a Day, in the same manner as contus'd Wounds which require Digestion. Take care to cover the Bone if it lie bare with dry Pledgits, not suffering the Wound to close until the Bone be exfoliated, confine the Patient to a regular Diet, and then Digest, Deterge, and Cicatrize after the usual manner.

R E M A R K S.

Kerkringius, Obs. 58. tells us, that a certain young Man of 20 years of Age having received a blow by a Horse on the *Tibia*, and his Surgeon not imagining the Bone to be affected, healed the Wound, but about 20 years after it broke out again in the same place, and part of the *Tibia* exfoliated. Some few years since, there was a Man in the *Charite des Hommes* at *Paris*, who had an Ulcer on the *Tibia* with a Cariosity of the Bone, in which there was an Artery of the Marrow which had a sensible Pulsation.

C H A P. LXIX.

Of a Fracture of the Bones of the Feet.

THIS Operation is a Reducing the Bones of the Feet to their Natural place.

THE CAUSE. This kind of Fracture can scarce happen, without some heavy thing falling on the part, or some violent Blow.

THE SIGNS. A Fracture of these Bones may be discovered by the great Contusion, Deformity, Depression, and crashing Noise, which may be heard upon stirring the Part.

The Foot is compos'd of the *Tarsus*, *Metatarsus* and Toes. The *Tarsus* is made up of seven Bones, three of which are termed *Cuneiformia*, because they are crowded like so many

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Wedges

Wedges between the rest ; the four other are called *Astragalus*, *Calcaneum*, *Scapha*, and *Cuboides*.

The *Astragalus* is a large irregular Bone, which is covered with a smooth Cartilage in the place, where it is united to the *Tibia* by *Ginglymus*. It is seated between the two Ancles, and has a Cavity below which receives the Protuberance of the *Calcaneum*, and in its fore-part it has a roundish Protuberance which enters into the Cavity of the *Scapha*. The *Calcaneum* is the largest of all the Bones of the *Tarsus*, the Body is supported on it in Walking, and its Name is derived from its use. It is larger behind than where it is joyned to the *Cuboides*. The *Scapha* or *Os Naviculare*, derives its Name from its resembling a Boat, and is more even without than within ; it has a Cavity which receives the Protuberance of the *Astragalus*, and is joyned before to the three *Ossa Cuneiformia*.

The *Cuboides* derives its Name from its Figure, though its six sides be not equal ; it touches the *Calcaneum* the *Naviculare* the *Cuneiformia*, and the last Bones of the *Metatarsus*.

The three Bones of the *Tarsus* are unequal, and more closely joyned without than within, and are connected to the *Naviculare*, and three first Bones of the *Metatarsus*. All the Bones of the *Tarsus* are closely articulated, and bound together by Ligaments and Cartilages, as in such manner, that the *Tarsus* seems to be only one piece.

The *Metatarsus* which makes the sole of the Foot, is compos'd of a Range of five Bones, which are smooth and convex outwardly, and slender at that end where they are Articulated with the first Range of the Bones of the Fingers, on the inside they are curve, and by this means adapted to receive the Tendons of the Muscles. These Bones have Processes both above and below their Articulation, with the Bones of the *Tarsus* which is very close, and the *Musculi Interossi* lie between them.

There are fourteen Bones in the Toes, the great Toe having two, and each of the rest three Bones. The first Range is longer than the rest, and their Structure and Articulation is the same with the Fingers, except in this, that they are shorter than the latter.

The *Metatarsus* and Toes form a Cavity under the Soal of the Foot, where the Tendons of the Muscles pass, and this Cavity hinders them from being compressed in Walking.

THE OPERATION.

Place the Patient on a Stool, or on his Bed, and if the *Tarsus* or *Metatarsus* be fractured, let two Assistants make the Extensions, one having hold of the end of the Foot, and the other of the Heel, and the lower part of the Leg, and then reduce the Bones.

The Toes are to be managed in the same manner as the Fingers in the Hand.

THE DRESSING. Since there is a Wound ever in a Fracture of the Foot, it must therefore be dressed like all other Contused Wounds, that is, digested not with greasie Unguents which are apt to rot the Tendons, but Spirituous Applications, as *Oyl of Eggs*, *Oyl of Turpentine*, &c. First lay on Pledgits, and then a simple Compress around the Foot dipt in some Defensative Liquor; and lastly, make the following Bandage.

Take a Roller between two or three Ells long, and an Inch and a half broad rolled up at both ends, begin with making a Circumvolution about the bottom of the Leg, and then cross on the bottom of the Foot; then bring it under the Foot and cross again, and return over the Foot crossing, and proceed to the end of the Foot in the same manner. (These Turns of the Roller leave Lozenge-like spaces, which has occasion'd this Bandage to have that Name given it) from the end of the Foot return to the Heel, bringing the Roller up, and covering the Foot with the Edgings, and then fasten by several Circumvolutions about the Leg; after the Bandage is made, lay the Leg in the Junks, as directed in the Chapter of the Fracture of the Thigh.

THE CURE. Dress this in the same manner as contus'd Wounds, and confine the Patient to a regular Diet.

REMARKS.

Fabr. Hildanus, Cent. 2. Obs. 47. relates, that a certain Person attempting to leap over a Ditch when the Ground was frozen, wrenched his Foot so violently, as to force the *Talus* and *Astragalus* out of their place, and broke the Ligaments which bound the Bones together, which forced him to take off the Foot.

C H A P. LXX.

Of Luxations in General.

THese kinds of Operations, are the Reducing of the Bones dislocated, into their Natural place.

THE CAUSE. Luxations most commonly are caused by some Blow, Fall, or other External Accident; but sometimes likewise they proceed from the too great Humidity and Relaxation of the Ligaments and Tendons of the Muscles, which are not firm enough to keep the Part in its place. Sometimes that Mucilage which Nature furnishes the Joynts with to lubricate and make them supple, is condensed and coagulated by Acids, and becomes of the Consistence of Plaster; and this filling up the Cavity, thrusts the Head of the Bone out of its place.

Sometimes the Head of the Bones, and the contiguous Nervous parts are united and cemented together by a certain glutinous Matter, and this is more dangerous than simple Luxations.

THE SIGNS. If a Dislocated Bone be compared with its opposite, which is in its proper place, (besides the loss of its Motion) the Part will appear very different in its Length, Figure, and Position.

Luxations are perfect when the Head of the Bone is entirely out of the Cavity, or Partial when it is only so in part.

The Dislocation of the Thigh is the most difficult to reduce, and that of the Heel-bone the most dangerous. The Thigh-bone has a strong Ligament which connects its Head to the *Acetabulum*, and cannot be dislocated except this be broke with some violence, or very much relaxed, and when this happens, it can never be re-united, and the Bone lies so deep and is cover'd by so many Muscles, that the Virtue of Medicines cannot reach it, and the Patient must unavoidably continue lame all the rest of his Life. Children often escape more easily than Men, which happens from the great Repose they take.

The Danger in a Luxation of the Foot, proceeds from the numerous Bones and Tendons in that part; but this is a case which very seldom happens. There is a great Pain, and sometimes a Convulsion happens in reducing these parts which proceeds from the acute Sense of the Tendons which are distended and torn. Though the Hurt be small the

Part is inflamed, but if it be great there spring up *Fungus's*, and the Patient is often convulsed.

Authors pretend there are but these three Luxations which are Mortal, *viz.* That of the Spine, that of the lower Jaw when it is perfect, and that of the Head with the first *Vertebra*.

The Luxation of the upper *Vertebra* are very dangerous, because they compress the Spinal Marrow, and by this means intercept the Animal Spirits.

Imperfect Luxations are more easily reduced than compleat ones, because the Head of the Bone is on the edge of the Cavity, and do's not require so much pains to bring it in.

In Luxations which proceed from a Relaxation of the Ligaments, it is easie enough to put the Bone into its place, but very difficult to retain it there.

The Articulation of the Arm with the *Scapula* and Wrist being very lax, those Bones are easily dislocated.

Luxations in Women, Children, and lean Persons, are reduced with much greater ease than in lusty Men.

When the Ligaments are broke, the Luxations are incurable.

When a Bone has but one Head, it is more easie to reduce it, than if it had two.

If Luxations be of long standing, it is difficult to reduce them, because the Ligaments grow hard; the Cavity is filled up as well as the Passage, by which the Bone should be brought into its proper place.

Luxations with Wounds are more dangerous and difficult to reduce than simple ones, which is occasioned by the Accidents which attend them.

In Luxations where the Edges of the Cavity are broke, the Bone being reduced, soon falls out again.

THE OPERATION.

In imperfect Luxations, or such as proceed from a Laxity of the Ligaments; the part must be drawn as little as may be, because in imperfect Luxations, the Head of the Bone is not far out of its Natural place, and when the Ligaments are relaxed, they easily give way.

The Bone must be drawn till the Head be near the Cavity, giving it several little turns on one side and another; as

occasion requires, and when the Head is on the Edge of the Cavity, guide it in.

Observe here always to bring the Bone in the same way it slipped out, and if the Part be inflamed, that must be something abated before the Reduction, lest the Patient be convuls'd.

The Extension must be greater or less as necessary requires, or the Patient can endure it.

THE DRESSING. After Reduction, keep the Part in its place with a proper Bandage, using a Scarf if it be the Arm, Junks if the Leg or other proper Machines in the rest of the Body.

The Bandage must not be too strait, for fear lest the Blood-Vessels and Lymphaticks be compress'd, and cause a Tumour; on the other Hand it must not be too slack, for fear lest it be not sufficient to keep the part in its place, and a new Luxation happen.

THE CURE. If an Inflammation proceed from the straitness of a Bandage, it requires such Internal Medicines as promote the Fluidity and Motion of the Blood, and such External Medicines as disperse the Inflammation.

If the Luxated Part be inflamed, you must not attempt to reduce it till the Inflammation be abated, because it is incapable of necessary Extension, and the Pain may cause a Mortal Convulsion.

To prevent Inflammation, foment the part which is reduced with a Decoction of the tops of *St. Johns-wort*, *Camomile*, *Tapsus Barbatus*, *Rosemary*, *Steechas*, *Arabica*, and dip the Rollers in that Liquor; this Fomentation hinders the Stagnation of the Blood, prevents Inflammation, and restores the Natural Springiness of the Fibres.

There is very often Oedematous Tumours on the Part which is Luxated; for the dispersing of which, Internal Sudorificks are useful in conjunction with very penetrating Volatil Oyls. For this purpose, Liniments made with *Distilled Oyl of Tartar* and *Humane Bones* are excellent.

The following Emplaster is an excellent Discutient. Take *yellow Wax* and very *fine white Rosin*, Melt these and put a little *White Amber* and *Gum Elemi*, of each a sufficient quantity to form a Mass, incorporate these with *Balsam of Peru*, and make an Emplaster which is to be laid on the Fractured part; the two edges of the Emplaster must not touch each other, by reason of the swelling of the Luxated Part. The contiguous Parts must by no means be embrocated, except

it be with Oyl of Turpentine, because all Oleous Medicines stop the Pores, hinder Perspiration, and relax the Parts instead of constringing them.

You must likewise forbear the use of Astringent Cataplasms which shut up the Pores, and cause a Tumour of the Part. It is better for this purpose, to use Decoctions made of the Nervous Plants in Wine.

If the Luxation proceed from a Hard, Plastery Matter, which by degrees has thrust the Bone out of its Cup, Discutient, and attenuating Medicines are required to dissolve the indurated Matter. The Internal ones are such as mortifie the Acid, as the *Volatil Spirit of Tartar*, the *Volatil Spirit and Salt of Human Bones*, with proper Laxatives and Sudorificks premised. The External Discutients may be such as dissolve the *Coagulum*; as *Balsam of Peru* mixed with *Spirit of Wine*, or dissolved with the *Yolk of an Egg*, with a little *Spirit of Ginger*. *Spirit of Earth-worms* is still better. *Oyl of Tartar* is very proper to resolve the *Coagulum*.

If the Reduction of a Bone be too long deferred, a *Coagulum* is formed, which hinders it, and must be first dissolved by the following Remedy. R. *Distill'd Oyl of Humane Bodies*, p. 1. the *Fætid Oyl of Tartar*, p. 11. Mix these, and put *Quick-lime* over them, then distil with a Retort, and rub the Part with this Oyl which is very penetrating.

If the Luxation proceed from a Relaxation of the Ligaments, Internal Sudorificks are good, and externally Discutients, Aromaticks, Astringents, mixed with *Nervine Medicines*, the Wounded part in a due State. *Crollius's Styptick Emplaster* mixed with *Oyl of Tartar*, and *Oyl of the Philosophers*, spread on Glove Leather, and applied on the Part, is very proper.

If the Bone be Dislocated and Fractured, these Mischiefs must be both remedied at once, and proper Extensions and Bandages made for each, as they shall happen to require.

R E M A R K S.

Fabr. Hildanus, Cent. 2. Obs. 90. tells us, That a certain young Maid having wrenched her Foot without any Dislocation, did for some Days walk on it without any very great trouble. But neglecting it, the Pain increased some small time after, and the Part became tumefied and inflamed; upon this a Mountebank was sent for, who having violently hall'd and twisted about the Parr, applied an Astringent Cataplasma

taplasm made of *Bole Armoniack*, the *Four Meals*, the white of an *Egg*, and made a very strait Bandage, without purging her Body before the Operation; this occasioned the Pain to encrease, and there was a Fluxion on the Part, attended with a continual Fever, *Delirium* and Restlessness. After some time an Abscess which was formed in the Part broke, and several carious Bones were thrown out, and the Patient continued lame all her Life after.

This Instance plainly demonstrates, of how dangerous consequence it is to neglect Wrenches and Luxations, or to torment the Patient while the Part continues pain'd and Inflamed.

CHAP. LXXI.

Of a Luxation of the Bones of the Cranium.

THIS Operation is a *Re-uniting the Bones of the Skull when they happen to be separated.*

THE CAUSE. This Distemper arises from an excessive Moisture which renders the Bones lax and yielding, (especially if the Sutures are not close) or too great a quantity of Blood passing through the Vessels of the *Dura Mater*, which incessantly bears on the Bones of the *Dura Mater*, and at length forces them quite asunder. The Famous Mounseur *Pascal*, had the Bones of the *Cranium* separated from one another, about three years before he died, which perhaps might proceed from abundance of Spirits employed, by his continual and intense thinking.

THE SIGNS. This Malady is visible, the Distance of the Bones may be perceived, and the beating of the Brain may be felt by laying ones Hand on the Patients Head, the Teguments giving way.

THE OPERATION.

This is bringing the Bones together, by compressing them with the Palm of the Hand, and then keeping them together by some convenient Bandage.

THE DRESSING. Cut off the Patients Hair, and lay a Compress dipt in *Spirit of Wine*; or some other Discutient and

and Spirituous Liquor, and make the Bandage called the *Capeline*, to bring the Bones together by degrees.

To make this, take a Roller about an Inch and a half broad, and four or five Ells in length rolled up at both ends, and begin to apply it on the middle of the Forehead, then bring the two Heads of the Roller behind the Head, and cross them, and engage one end of the Roller by passing the other over it; then raise one end of the Roller, and bring it over the Sagittal Suture quite to the middle of the Forehead, and there engage it with the other Head of the Roller, which you must bring over the Forehead; then raise the Roller and bring it over the Head, making an Edging on the first turn over the Sagittal Suture; and then bring it down behind the Head, and engage it by the other Head, with which you must continue to make Circular turns round the Head, while you raise the other end, making Edgings alternately on each side of the Head till the whole be covered. In the last place, bring the two ends of the Roller round the Head passing round over the Forehead, and pin it at the ends.

THE CURE. Soak the Dressings every day in *Red Wine*, *Spirit of Wine*, or some such Spirituous and Resolvent Liquor, to promote the Transpiration of the watry Matter, and let the Patient use a drying Diet; forbearing all intense thinking; let him keep his Mind gay, and purge with *Hydragogues*, as *Scammony*, *Jalap*, or their *Resins*. When the Bandage seems to slacken, from the Bones approaching to each other, it is time to undoe it, and bind the part up again.

REMARKS.

This is a Distemper which rarely happens, however the Famous Monsieur *Pascal*, a Name well known in the Learned World, had such a Disjunction of the Bones of the Head, that the Motion of his Brain could be felt by applying the Hand on his Head.

Fabr. Hildanus, Cent. 2. Obs. 7. tells us, that a Robust fellow of 40 years of Age who never had been ill, was seized with a continual Fever. In the beginning he neglected all Methods of Cure, which proved of ill consequence to him, depriving him of Sleep, and throwing him into a *Delirium*. Upon the sixth or seventh day the Coronal and Sagittal Suture separated, and the Motion of the Brain might

might be felt by laying ones Finger on the Interstice of the Sutures. Upon the seventh day the Patient had a profuse, critical, Sweat, tinged like the Rust of Iron, by which the Morbifick Matter was thrown out, and by degrees the Sutures re-united, and the Patient recovered.

CH A P. LXXII.

Of the Luxation of the Bones of the Nose.

THIS Operation is a Reducing the Sutures of the Bones of the Nose, to their Junction with the Coronal Bone.

THE CAUSE of this Accident, is usually some Blow or Fall.

THE SIGNS. When these Bones are Luxated, there appears a small Cavity between the Bones of the Forehead and Nose, and these last shake upon the least touch; the Nose it self is distorted, and the Patient breaths with difficulty.

THE OPERATION.

This Dislocation seldom happens, the Bones of the Nose and the Coronal Bone being very firmly united, and when it does, it must be reduced in the following manner. Take a small stick of Deal of a proper size planed and fitted to the Nostrils, and wrapt round with Tow; and then placing the Thumb on the Root of the Nose, partly on the Coronal, and partly on the Nasal Bone, to keep the Bones steady, put them into their place with the stick Tow. In putting the stick up, you must take care not to hurt the spongy Bones of the Nose, for fear of wounding the Part, and causing ill-conditioned Ulcers.

THE DRESSING is the same as in Fractures of the Nose.

THE CURE. If there be a Wound, dress it once every day as a Complicate Wound.

C H A P. LXXIII.

Of the Luxation of the lower Jaw.

THIS Operation is *Restoring the Head of the Bone into its Natural Cavity.*

THE CAUSE. The Luxation of the lower Jaw often proceeds from opening the Mouth too wide in yawning. This Luxation most commonly happens in the Fore-part, and rarely in the hinder, by reason of the Mamillary Processes which hinder the Bone from slipping behind. The Jaw is sometimes luxated on one side only, and at other times on both.

THE SIGNS. When the Jaw-bone is dislocated only on one side, it is turned transversly, and is plainer and more deprest, than the sound side on which there is an apparent Tumour. The Patients Mouth stands wide open, and he can neither shut it nor chew his Meat; and the Teeth of the lower Jaw stand out farther than those of the upper, and do not answer to the correspondent ones on the other side.

When the Mandible is luxated on both sides, it hangs on the Breast, and the *Saliva* flows incessantly from the Mouth, the Parotid Glands being compressed by the Head of the Bone. There is a Tension of the Temporal Muscles, and the Patient can neither shut his Mouth, nor stir his Tongue.

When there is a Dislocation on both sides, the Bone is much more difficult to reduce, than when it is on one side only; and the Accidents are more desperate; and unless it be instantly restored, there is a great Pain, Fever, and an Inflammation of the Throat, and the Patient dies in ten days time.

The OPERATION.

If the Bone has been out for any time, Emollient Remedies must be used before it can be restored.

To reduce a compleat Luxation when both Heads of the Bone are out; let the Patient sit upon the Floor or a low Stool, and place a Servant behind to support and keep his Head steady, and then put both your Thumbs into the Patients

tients Mouth, having wrapt them round with a Tape to defend them from being hurt by the Patients Teeth, and to hinder them from slipping when you press on the lower Jaw ; then clap your other Fingers under the Patients Chin, to draw the Jaw and raise it up.

But if the Mouth be so close that you cannot thrust your Thumbs in, put a small Wooden Wedge about an Inch thick, and introducing these Wedges strongly by their thinner end, keep them on the Teeth ; in the last place, put a Girth under the Chin, and let a Servant put both his Knees on the Patients Shoulders, and draw the ends of the Girth, while you thrust down the Wedges to bring the Jaw into its place.

When it is only Dislocated on one side, place the Patient on a low Stool, and let a Servant stand behind to keep his Head steady ; then put your Thumb on the Grinders of that side which is dislocated, and thrust the Jaw down, and reduce it into its place.

The Mandible may be reduced sometimes by a blow of the Fist only, on that side which is luxated, but this can only take place when the Luxation is uncompleat.

THE DRESSING is the same as in a Fracture of the Jaw.

THE CURE. Let the Patient feed on Nourishing Liquids, for he cannot eat any thing that is solid, and let him keep himself still in his Bed ; and if there be the least signs of Inflammation, give him Clysters to keep his Body open.

C H A P. LXXIV.

Of the Luxation of the Clavicle.

THIS Operation is the Reduction of the Head of the Clavicle to its Articulation, with the Acromion of the Shoulder-blade, or the Sternum.

THE CAUSE of the Luxation is some Blow or Fall.

THE SIGNS. The Clavicle is most commonly dislocated in its Junctionure to the Acromion, and very seldom in that to the Sternum, because the first Rib serves as a support to it.

When

When the Clavicle is dislocated, the Patient cannot lift his Arm without a great deal of Difficulty, the *Aeromion* causes a jetting out, and there is a Cavity caus'd by the Clavicles falling down.

This Accident is hard to be remedied in Ancient Bodies, because the Ligaments grow hard and bony, and are very difficultly agglutinated when once they are broken.

THE OPERATION.

Let the Patient lie on his Back, and put some hard convex Body between his Shoulder-blades, then press his Shoulders and the side of his Breast, and in the mean time reduce the Bone into its place.

THE DRESSING is the same as in a Fracture of the part.

THE CURE. Let the Patient keep his Bed, and let his Diet be Roasted Flesh, or any other Nourishing Meat, and bleed him, and give him a Clyster if occasion shall require.

CHAP. LXXV.

Of the Luxation of the Vertebrae.

THIS Operation is the *Restoring one of the Vertebrae which is slip't out of its place.*

THE CAUSE. The Dislocation of the *Vertebrae* proceeds from some Blow, Fall, Strain, violent Motion of the Body, or some ill Posture, or the Relaxation of some Ligament by a Flux of Humours.

THE SIGNS. Dislocations of the *Vertebrae* are compleat or imperfect.

In an imperfect Luxation of the *Vertebrae* the Neck remains distorted, the Face is Livid, and the Patient has a great Difficulty to speak and breath; but if the Luxation be compleat, the Nerves and Spinal Marrow suffer a violent Compression, and the Patient must inevitably die, unless he be relieved forthwith.

The *Vertebrae* of the Back may be dislocated four several ways, Outwardly, Inwardly, to the Right, and to the Left. When any of the *Vertebrae* are luxated inwardly, there is a Depression in the place, but if outwardly, on the contrary there is a Tumour. If the *Vertebrae* be slipt outside-ways, there is an unusual rising that way.

When any of the *Vertebrae* are luxated inwardly, the Patient has a Difficulty of making Water and voiding his Excrements, cannot move his Thigh without a great deal of difficulty, and it becomes cold; because the Origin of the Nerves which are dispensed to that Part are compressed; and these sort of Luxations where the *Vertebrae* is slipt inwards, are very difficult to reduce, because there can be no compression made on the Belly for that purpose.

If the *Vertebrae* of the Back bunch out in Children, the Ribs do not grow at all, or at least but very little, and jet forwards, and make an acute Angle at the *Sternum*, by which means the Cavity of the Breast is not capacious enough for the Expansion of the Lungs, but they being compressed, the Patient becomes Asthmatick.

If the Spine be convex, there is a stop put to its growth, but the Arms and Legs encrease exceedingly.

When the Rump-bone is dislocated, the Patient cannot bring his Heel towards his Buttock, nor bend his Knee without a great deal of Difficulty; nor can he sit or go to Stool without a great deal of trouble.

THE OPERATION.

To reduce the *Vertebrae* of the Neck, of whatever kind the Luxation be, place the Patient on a low Chair, and let a Servant lay a great stress on his Shoulders, and while he does this, take hold of the Patients Head under the Ears, and making an Extension of it, turn it to and fro till it be reduced; and you may know that it is so, by his being able to turn it himself and the cessation of the Pain.

To reduce the *Vertebrae* which are luxated externally, let the Patient be laid on a Table on his Belly, and fasten a Girth under his Arm-pits, and on the Hips, and tie at the same time his Thighs and Legs, and draw both above and below, without making too violent an Extension, and in the mean time reduce the Part.

If the *Vertebrae* cannot be reduced in this manner, take two sticks near a Fingers breadth in thickness, and about four or five times as long, and wrap these in a Cloth for fear
of

of hurting the Patient; then lay one of these sticks on each side the dislocated part, and make a great pressure on them, to thrust in the *Vertebrae*, or take a great Roller of Wood, such as Pastry-cooks use, and roll it to and fro on the two sticks; Note here that the two sticks which are on the side, be higher than the Spinal Process of the *Vertebra*, to prevent all danger of breaking it.

You may conclude the *Vertebra* is reduced, if it be equal with the contiguous ones.

Though the Luxation of the *Vertebra* inwardly be almost impossible to reduce, and most commonly is Mortal, you not nevertheless abandon the Patient; and therefore when this happens, place the Patient on his Back, and make an Extension with Pullies, in the manner above described, and then manage the Spine, and try to bring in the *Vertebra*. If this fail, make an Incision on the *Vertebra*, which is depressed just over its Spinal Process, and take hold of it by this, and endeavour to reduce it in that manner.

If the Rump-bone be thrust in by any Blow or Fall, put the Fore-finger of the right Hand into the *Anus*, and pushing it up with the left Hand press it out, and guide it into its place.

If the Luxation be external, which sometimes happens in violent Labours, put the Bone gently in with the Fingers. These Bones are confirm'd in three Weeks.

THE DRESSING. When the *Vertebra* of the Neck are reduced, let the Patient incline his Head to that side which is opposite to the Dislocation, and put a Fillet about the Neck, which must be fastned on the Arm.

If you have made an Incision on the *Vertebra*, and there ensue a Flux of Blood, stop it with Astringents.

If the *Vertebra* be luxated outwardly, lay a small Plate of Lead on each side to keep it in its place, and lay a thick Compress over it, and keep this on with the Napkin and Scapulary, as is directed in the Chapter of the *Empyema*.

If the Luxation be inwards, the *Vertebra* must not be compressed by Bandages, nor any Plates or Splints laid on it for fear of occasioning a new Dislocation.

In a Luxation of the Rump-bone, whether inwards or outwards, the Dressing must be the same as in a Fracture of the Rump-bone.

THE CURE. If any Incision be made to bring out the *Vertebra* which is luxated inwards, the Wound must be dressed after the usual manner, and the Patient must lie on one side, and observe a good Diet.

R E-

REMARKS.

Fabr. Hildannus, Cent. 5. Obs. 68. relates, that a certain Man having a Luxation of two *Vertebrae*, was Paralytick from the Navel to the Feet.

A Country Man hapning to fall from a Tree, had the second *Vertebra* of the Loins luxated inwards; upon which he felt a great pain, which continued for a long time, and he vomited his Meat before Digestion, and continued in this condition several Days, without being able to retain any thing in his Stomach. After some short space he was seized with a burning Fever, an unextinguishable Thirst, want of Sleep, Restlessness, with a dryness of Tongue, and a *Delirium*; all the Parts below the Navel became Paralytick, and he could neither retain his Urine nor his Excrements.

Bartholin. Cent. 6. Hist. 48. relates, that a certain *Irish* Woman turned her Head round so far, that her Nose stood in a right line with her Shoulder, her Head could be replaced in its Natural Situation with a great deal of ease, but so soon as this was done, it would immediately return to its former position; this Deformity he assures us, was caused by Mercurial Applications to the Neck.

C H A P. LXXVI.

Of the Luxation of the Ribs, and the Cartilago Mucronata.

THIS Operation is the Reducing the Ribs to their Function with the *Vertebrae*, and the *Cartilago Mucronata*, with the Sternum.

THE CAUSE of their Luxation, most commonly is some Blow or Fall.

THE SIGNS. The Luxated Ribs are either deprest inwards, or elevated outwards. When a Rib is deprest inwards, there is an apparent Cavity near its Articulation with the *Vertebra* of the Back, but if the Head of the Rib slip outwards, there is a hard Tumour on the Part, and in both

one

one and the other kind of Luxation, Respiration is painful and laborious, and the Patient cannot move his Body without Pain, because the Rib presses on the Muscles.

The Mucronated Cartilage is inverted, and its point turned inwards, especially in Women and Children; and when this happens, it usually occasions them to die emaciated, because the Liver and upper Orifice of the Stomach are hurt, and the Vessels being strongly compressed, by this means the Circulation of the Blood is interrupted. When this Cartilage is luxated, there is a great hollow in the lower part of the Breast, and the Patient cannot breath without a great deal of Pain and Difficulty.

THE OPERATION.

When a Rib is luxated outwards, lay the Patients Arm over a Door to suspend the Body, and then thrust the rising of the Rib into its place.

If the Rib be luxated inwards, you must make an Incision to bring it outwards.

When the Mucronated Cartilage is depressed, lay the Patient on his Back on some convex Body; and then press both sides of the Breast with the Hands to raise the Cartilage. If this fail, apply dry Cupping-glasses on it to raise it. Before you attempt to reduce it, chafe the Part very well with Oyls of *Castor*, *Turpentine*, and such like Spirituous Topicks.

THE DRESSING in Luxations, is the same as in Fractures of the Ribs.

When the Mucronated Cartilage is reduced, lay some proper Emplaster on to strengthen it, *Ambrose Parry* uses this Composition. *Rx. Root of Bistort ʒi. Cypress Nuts ʒi. Mastick, Frankincense, ā. ʒiſs. Balauftiums ʒi. Oyl of Walnuts ʒiſs. Pitch and Turpentine*, as much as will reduce these Ingredients to the consistence of an Emplaster.

REMARKS.

Bartholin, Cent. 2. Hist, 12. relates, that a certain young Man having a Looseness, had the lower Ribs on the right side luxated in such a manner, as to be seen and felt. All the means that his Surgeons could think on proved ineffectual, his Strength decayed, he had a lingering Fever; after some time there arose a small pustule which supurated and

broke, upon which the luxated Ribs returned to their place, and the Ulcer was cured, and the young Man did well.

The same Author, *Cent. 4. Hist. 58.* relates, that a certain Man being very much tired with walking in stony ways, felt a great Pain on the right side near the Spine, and a Tumour arose on the *Sternum*, which incommoded him so much, that he could not lie on the right side, or sit by any means, but when he stood erect he did not feel any such pain. After some time the Tumour abating, it was found that the Symptoms proceeded from a Luxation of the eighth Rib, which likewise was fractured without any division of the Skin.

C H A P. LXXVIII.

Of the Luxation of the Humerus or Shoulder-bone.

THIS Operation, is the *Reducing of the Head of the Bones into the Cavity of the Head of the Scapula.*

THE CAUSE. This Luxation proceeds from some Blow, Fall, or Relaxation of the Ligaments.

The slipping of this Bone out of its Cavity is not difficult, its Head being extremely smooth and slippery, as well as the Cavity which receives it, which is exceeding Membranous, very shallow, and lubricated with an oleous Liquor, which makes it easily slip aside upon the application of any force outwardly.

THE SIGNS. When the Luxation is downwards, and the Head of the Shoulder-blade is slipr into the Arm-pit, there is a Cavity on the Shoulder, the *Acromion* is sharp and jets out; the Elbow stands out, and cannot be brought to the Body without force; it is drawn forwards more difficultly than backwards, and is longer than it ought to be; the Patient cannot lay his Hand on the opposite Shoulder, or bring it to his Mouth, and he feels a great deal of pain when he stirs it in any manner whatever, by reason of the Compression and Tension of the Muscles; but observe here, that the Disability to lift or extend the Arm, is not a sufficient

cient of a Luxation, because the same thing must necessarily happen on Contusions, Fractures, Inflammations, Wounds, Apostems, Schirrosities, and Fluxions.

The OPERATION.

The Luxation of the Shoulder may be reduced in six several manners, viz. by the Fist, by the Shoulder placed under the Patients Arm-pit, by a ball of Thread thrust by the Heel by a Ball on a Leaver, by the Ladder; and lastly, by the *Ambly*.

To reduce a Shoulder by the help of the Fist clenched, lay the Patient on a Table on that side which is opposite to the Light, and let one Servant put a Girth under his Arm-pit, and another a second above the Elbow; let him who holds the Girth which passes under the Arm-pit keep it firm, and let him who has hold of that above the Elbow, draw it till the Head of the Bone be directly against the Socker, and then put it into its Cavity with your Hands or Fist; if the Hands are not sufficient, you may make use of Pul-lies.

Or if you please, you may place the Patient on a low Seat (or if he be a big Man, he may sit on the Ground) and plant a Servant on one side to hold the Patients Body with his Arms, or a Towel, and then take hold of the upper part of the *Humerus* with both Hands, and let another Servant kneel behind you, and take hold of the Luxated Arm above the Elbow which passes between your Legs, and while both these make the Extension, do you knap the Bone into its Cavity.

To reduce a Shoulder with the Heel, lay the Patient on the Ground on a Coverlet or Quilt, and then put a Ball of Thread under his Armpit, and do you sit opposite to the Patient directly against the luxated Arm, and if it be the Foot, place the Heel of the right, and if it be the left, the Heel of the left Foot on the Ball; then take the Patients Arm with both Hands, and draw it towards the Feet, and thrust the Ball strongly against the Armpit. In the mean time let a Servant stand behind the Patients Head, and draw the Head of the *Humerus* with a Napkin, or any other Girth, and put the Seal of his Foot on the Patients Shoulder, and thrust it down; and let another Servant be plac'd behind to keep his Body steady.

To reduce a Shoulder by the help of the Shoulder of another Person, place the Patients Arm-pit on the Acute end of the Shoulder of a lusty Man, who is taller than the Patient, that so he may keep him suspended; the Man who holds him, keeping his Hand to his Breast; and while this is doing, put the Head of the *Humerus* into its Cavity. If the Patient be very light, and the Weight of his Body be not sufficient to reduce the Shoulder, let some Person or other hang on his Shoulder. If the Patient be so tall that it is difficult to find a Man of a higher Stature, let the Man stand on some small Stool.

To reduce the Arm with the Leaver, take one four or five Foot long with a bunch like a Tennis Ball in the midst, and on each side the Ball put in two Pegs at such a distance, that the Shoulder may lodge between them; then placing the Patients Arm-pit on the Ball, let two Men lift up the ends of the Staff, and raise the Patient from the Ground, and in the mean time do you draw down the Arm, and reduce the Head of the Bone into its Natural place.

To reduce a Luxation of the Shoulder with the Ladder, fasten a Ball of thread on the step of a Ladder, which must be of a convenient size to put under the Arm-pit; then let the Patient get upon a Stool, and tie both his Legs together, and the Arm which is sound behind his Back, that it may not rest on his Shoulder when in the Reduction, then place the Arm-pit on the Ball, and bring the Ladder as near him as may be, for fear lest the Arm be broke in the Reduction; in the next place, put a strong Girth above the Elbow, and let a stout Fellow hold this strongly, and then take away the Stool, and this will bring the Head of the Luxated Bone into its place, or if it do's not, you must twist it on one side and another, till it knaps into its place. When it is reduced, you must put the Stool again under the Patients Feet, and take the Arm carefully out of the Ladder, having great care not to lift it up for fear of a new Dislocation.

Instead of a Ladder, you may if you please make use of a Door, observing the same Circumstances.

The *Amby* of *Hippocrates* known to our Surgeons by the Name of the Commander, is made of two pieces of Wood fastned with Pins; these pieces of Wood must be near two Inches and a half distant from each other, and to the top of these another piece must be fastned, which is longer than a Mans Arm, and which advances half a Foot at one end. This last moveable piece of Wood must be fastned between

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the other two with a Pin on which it turns, and may be raised or let down at the end.

To reduce the dislocated Arm with this Instrument, place the Patient on a low Stool, something lower than the *Machine*, with his Feet tied together for fear he rise when the part ought to be reduced, the Patients Arm must be laid all along this moveable Branch, the lesser end of it being applied under the Patients Arm-pit, and tied in two or three places, and when this is done depress the lower end, and this will bring the Head of the Bone into its place.

THE DRESSING. When the *Humerus* is reduced, put a small Ball of Lint under the Arm-pit to fill the Cavity, and keep this Ball on with a Compress cleft at both ends, which you must bring up and cross on the Shoulder; besides this, you must lay a Compress on the other Arm-pit for fear least the Compress hurt it, and make the Bandage called *Spica* with a Roller five Ells in length, and three Inches broad rolled up at one end.

In applying this bring the end of the Roller under the Arm-pit opposite to the Luxation, then bring the other end of the Roller over the part affected, and back again under the same Arm-pit; and lastly over, so as to cross over the first turn on the Shoulder, then bring the Roller over the Breast, and next under the Arm-pit, opposite to that which is affected; then pass behind the Back and under that Arm which was luxated, and make a small Edging there, then bring it under the Arm-pit and over the Shoulder, and continue these turns of the Roller in this manner, making Edgings every time you pass over the Shoulder concerned. These Edgings something resemble an Ear of Wheat, and this it is which gives the Bandage this Name. When the Shoulder is covered, which is done by gradually descending to the Arm, make two Circular turns round the upper part of the *Humerus*, and these will make a Triangle, which is called *Geranium*, or the Cranes Bill; this Triangle must be covered by rising with Edgings, and when this is done, bring the Roller round the Breast and fasten it, and put the Arm in a Sling. The manner of which we have described in the Chapter of the Fracture of the Arm.

THE CURE. Let the Patient keep his Arm in a Sling, the Cubit making a right Angle with the Arm, and resting on the Ribs.

The Dressings must not be taken off the first four or five Days, unless some Accident happen, the Patient must feed

on Nourishing Diet, and repose himself as much as possible.

REMARKS.

Fabr. Hildanus tells us, that a Child of eight years of Age, of a good Habit of Body, had his right Arm dislocated by a Fall, which mightily emaciated and wasted him, and this was the more remarkable, that lessening, while the other parts grew larger. At length his Relations perceived a coalition in the bending of his Arm, which hindred him from extending it, and it continued bent like a crooked stick, without putting him to any pain.

C H A P. LXXIX.

Of the Luxation of the Elbow.

THIS Operation is a *Restoring the Cubit to its Articulation, with the Humerus.*

THE CAUSE. This Dislocation proceeds from some Fall or Relaxation of the Ligaments.

THE SIGNS. The Cubit is luxated in four several manners, either inwards or outwards, or on one side.

When the Cubit is luxated inwards, the *Olecranon* is stop'd in the internal Cavity of the Condyl of the Shoulder-bone, the Arm is bent, and the Hand is turned inwards; but if the Luxation be outwards, the Arm is strait, and shorter than the other; the internal Process of the Cubit lies in the external Cavity of the Condyl of the *Humerus*, and the *Olecranon* passes beyond the Cavity, which naturally it ought to lodge in. If the Luxation be on one side, there is a rising in the place of the Head of the Bone, and a Depression where it is slip't out. These Luxations for the most part are incomplete.

THE OPERATION.

If the Luxation be inwards, let several Servants make an Extension of the *Humerus* and Arm, and in the mean time bend the Arm, and bring the Hand to the Shoulder.

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There are divers Practitioners who lay a Ball on the Flexure of the Joynt, and then bend the Arm presently, bringing it to the Shoulder.

If the Cubit be luxated outwards, let the Arm be drawn above and below, and during these Extentions, put the *Olecranon* into its Cavity. In reducing this Luxation, you must not bend the Arm as in the former case, because a Motion of this kind would hinder its Reduction.

If you like it better you may proceed thus; take the Patients Arm and put it round a Pillar, and fasten a Girth near the Process of the *Cubitus*, and then draw this with a Leaver round the Pillar, till the Bone knap into its place. Or take a stick of a Foot long, and an Inch Diameter, and wrap the middle of this round with a Cloth, then take hold of both ends with each Hand, and push strongly in the Head of the Bone with the middle of the stick, while the Servants make the Extension. This last Method of Reducing the Bone is very serviceable, when the Luxation is inwards or outwards; but if the Cubit be slipt on one side, let two Servants take hold one of the Arm, and the other of the Shoulder; and then reduce the Bone into its place. Note here, that a Luxation of the Cubit can hardly be without the *Radius*, starting from the Shoulder-bone, and therefore in reducing the Cubit, the Surgeon must examine whether the *Radius* remain in its place, which he may discover by the Pronation and Supination of the Hand; for if he be unable to do this, it is a certain sign that the *Radius* is separated.

THE DRESSING. Lay a simple Compress dipt in some Defensative Liquor, to take off the Inflammation. This Compress must be slipt lengthways, for the better applying it on the Juncture, and when it is on, make a Bandage with a Roller five Ells long, and an Inch and a half broad. In doing this, first make a Circular turn on the lower part of the *Humerus*, then descend obliquely in the bending of the Arm, and make a Circular turn on the upper part of the Arm, and an X on the Flexure of the Elbow, and thus continue to ascend and descend, making Edgings on the Elbow, and Xs on the bending of the Joynt, till the Elbow be quire covered; and when this is done, ascend up the Arm, and fasten the Roller about the Breast.

THE CURE. Put the Arm in a Sling, in the same manner as was described in the Fracture of this Part. Let the Patient use a good Nourishing Diet, and often make a Pro-

nation and Supination of his Arm, for fear least the Bones be cemented together.

C H A P. LXXX.

Of the Luxation of the Bones of the Wrist.

THIS Operation is a *Reduction of the Bones of the Wrist, to the Cavity of the Radius.*

THE CAUSE. This Luxation most commonly proceeds from some Fall or Relaxation of the Ligaments.

THE SIGNS. The Dislocation of the Wrist is either inwards, outwards, or one side. When the Dislocation is inwards, and the Hand is turned back when it is outwards, it is bent, when it is on the right-side the side of the little Finger; and when on the left, it is turned on the side of the Thumb.

The Articulation of the Hand being very lax, it may easily be luxated.

THE OPERATION.

If the Luxation be inwards, lay the back of the Patients Hand on a Table, and while the Extension is making, press the prominent Bone into its place with the Palm of your Hand. If the Luxation be outwardly, lay the flat of the Patients Hand, and proceed as before. If the Luxation be on one side when the Extension is made, twist the Bones on the side opposite to the Dislocation, and draw each Finger separately, that so the Tendons may come into their place.

If the Bones of the Wrist are split into the Hand, lay the back of the Hand on a Table, and press the Bones into their place.

If they are split on one side, press them to the opposite.

The *Metacarpus* is composed of four Bones. The two middle of these cannot be dislocated on one side, because they are supported by the two Bones which are on each side. That which sustains the Fore-finger, and that which sustains the little, cannot be dislocated towards the Fore-finger, nor that

that which sustains the little Finger, towards the middle Finger. All the other Bones may be luxated inwards or outwards; but since the manner of reducing them is the same as with that of the *Carpus*, I shall remit the Reader thither.

The Fingers may be dislocated inwards, outwards, or one side. To reduce them, there is nothing farther necessary than to pull them, and put the Head of the Bone into its place.

In these Dislocations the Parts recover their Natural tone in twelve Days time.

THE DRESSING. This is the same with that taught in Chap. LXVI.

THE CURE. Take care that the Bandage be not too strait nor too slack, and keep the Dressings on as long as may be, and let the Patient use a strengthening Diet.

REMARKS.

In the second Month one may perceive by the help of a Microscope, several white Spots at the extremity of the Wrist in a *Fetus*, and there the Ossification of the Bone commences. In the fourth, fifth, and sixth Month, they only encrease in their Dimensions, without any other sensible Alteration. In the seventh and eighth Months, the *Epiphyses* of the Fingers can hardly be discerned; but in the ninth Month, they are as distinct and visible, as in the Bones of Adult Persons.

CHAP. LXXXI.

Of the Luxation of the Thigh.

THIS Operation is the Reduction of the Head of the Thigh-bone, into the Cavity of the Ischion.

THE CAUSE. A perfect Luxation of the Thigh cannot happen, except the Part suffer great Violence, for the Head of the Thigh-bone is retained in the Cavity of the *Acetabulum* by a strong Ligament. The Circumference of this Cavity is edged with Cartilaginous Ligaments, which likewise cover the Neck of the Head of the Thigh-bone, and

and several of the largest and strongest Muscles of the whole Body are inserted into this Bone, and conspire to strengthen this Articulation. Sometimes indeed a Luxation happens from too great a Relaxation of the Ligaments, but this is ever an imperfect one.

THE SIGNS. When the Head of the Bone is stopt on the share-bones, there is a Tumour in the place where the Head of the Bone is, one Leg is longer than the other, and the Knee and Foot are turned outwards; the Knee cannot be bent, and the Thigh brought toward the Groin, because the Head of the Bone keeps the Muscles extended.

If the Head of the Bone be slipt outwards, the Leg is shorter, because the Head of the Bone passes over its Cavity; the Knee and Foot is turned inwards, and the Heel outwards, and the Patient cannot support himself, except on the end of his Foot. It sometimes happens that the Head of the Thigh-bone remaining for a considerable time in the same place, forms a sort of a Cavity amongst the Muscles, which are hardened by a constant compression of the Bone, and by this means sometimes the Patient is able to walk without a stick.

When the Thigh-bone is slipt forwards, the Head of the Bone is lodged on the *Os Pubis*, and makes a Tumour in the Groin, and the Muscles of the Buttocks have Furrows in them, which is caused by their very great Tension. The Patient cannot bring his Thigh to the Groin, nor bend his Knee, both Legs in a mannerequal, and the Luxated Leg can rest on the Heel only; and there is frequently a suppression of Urine, which proceeds from the Compression of the Nerves.

When the Luxation is backwards, there is a large Tumour on the Buttock, which is made by the Head of the Bone, and the Pain is very great which is occasioned by the violent Tension of the Muscles, the Leg is shorter than the other, and there is a depression in the Groin, the Patient cannot bend his Leg but it hangs back.

If the Luxation proceed from an internal Cause, there is small hopes of the Patients Recovery.

THE OPERATION.

To reduce a Luxation inwards, lay the Patient with his Back on a Table, and put into the Table a Pin a Foot or

two long, and put this between the Patients Legs near the Groin; then fasten one Girth under the Juncture of the Thigh, and another above the Patients Knee, and with these let the Extension be made. In the mean time put the Head of the Bone into the *Acetabulum*; when the Head of the Bone is drawn enough, let the Assistants who make the Extension slacken a little, for the more easie reducing the Head of the Bone; and this is to be observed in all Reductions whatever.

If the Thigh be luxated outwards, let the Patient lie on his Belly, and make an Extension with Girths after the manner described, and thrust the Thigh inwards to bring the Head of the Bone into the Cavity.

If the Luxation be forwards, lay the Patient on the opposite side, and make the Extensions as before; and when this is done, put the Head of the Bone into its cavity with a Tennis Ball, and push this with the Hand, or with the Knee, for the greater force, and bring the luxated Leg to the other.

If the Luxation be backwards, place the Patient on his Belly, as in a Luxation outwards, and let the Extension be made in the same manner; then take the Patients Knee and draw it outwards, to bring the Head of the Bone into the *Acetabulum*.

When the Ligaments of the Thigh are relaxed, the Extension must not be strong; for it is plain, this is both useless and hurtful, and a prudent Surgeon must always consider the Nature of the Luxation, before the Extension be made.

THE DRESSING. The Bandage must be the *Spica*, and is the same which is described in the Operation of the *Bubonocoele*.

THE CURE. Let the Patient refrain from all Cold, Moist, and Phlegmatick Meats, and use a strengthening Diet, and drink Ptilans aromatized with *Rosemary*, *Sage*, *Marjoram*, chafe the Neighbouring parts with Oyls of *Dill*, *Chamomile*, and *White Lilies*; and because the Patient leads a Sedentary Life, and there is apt to be a congestion of Humours in the part, purge his Body at convenient times with Lenitives, and if you should now and then give him a Vomit, it would not be a miss.

As for local Applications, take a bag of leaves and flowers of *Betony*, *Sage*, *Rosemary*, *Primula veris*, *Lavender*, *Ori-ganum*, *Wormwood*, ā. one Handful, *Roses*, *Juniper Ber-ries*,

ries, *Oak-moss* ȃ. two Handfulls, *Aniseeds* two Ounces, boil these with a handful of *Salt*, and apply it round the Luxated part; do this once every three or four Days, and rub it together with the Contiguous Parts with Juice of *Earth-worms*.

If the Reader pleases, he may turn to the Hundredth Observation, in the fourth Century of *Hildanus*, where that Author expatiates very much on this important Subject.

REMARKS.

Kerkringius, *Obs.* 61. tells us, that in opening one of his Nieces who had in her Life-time been afflicted with a lameness, which had eluded all attempts to cure her (for want of a right understanding of the Cause) he found the Cavity of the Hip very large and deep, and the Head of the Thigh exceeding small, by which means it easily slipped up and down, the Ligaments being relaxed, and elongated by the Weight of the Thigh, upon drawing the Leg it would be equal to the other, because the Head of the Thigh-bone was replaced in its Cavity, but then again it would immediately fall out.

C H A P. LXXXII.

Of the Luxation of the Knee.

THIS Operation is a Restoring the *Tibia* to its Articulation with the *Thigh-bone*.

THE CAUSE of this Dislocation is some Fall, Strain, Wrench, or Relaxation of the Ligament.

THE SIGNS. The *Tibia* may be luxated four ways, *viz.* downwards, forwards, or on either side.

It seldom happens that the Leg is luxated forwards, because the Tendons of the Muscles of the Leg keep the *Tibia* streight; and when such a Dislocation happens, those Tendons must be lacerated or exceedingly relaxed. When the *Tibia* is luxated backward, the *Condyls* are in the Cavity of the Ham, and the Leg is bent. When the *Tibia* is luxated on one side, there is a rising on that side, and a Depression on the opposite; if the *Condyl* be slipped inwards, there

there is a Rising within, and a Depreffion outwards, and the Leg is turned outwards, and directly the contrary happens, when it is luxated inwards.

The *Tibia* is easily luxated, because its Articulation is not very strict, the Condyls of the *Tibia* jet out, and the *Sinus* are shallow.

The OPERATION.

To reduce the Luxation when the Head of the Bone is flipt backward, place the Patient on a low Stool, or a Bench of a midling height, with his Back turned towards you, then put his Leg between yours, and bend it with both Hands towards the Patients Buttocks:

Or let the Patient lie on his Belly, and take a Coul-staff with a Bunch or Ball in the midst, let an Assistant put this on the bending of the Ham, and on the end of the Bone which jets out, and let another put a Girth something more than two Inches broad, and in the mean time bend it forcibly against the Buttock.

If the Dislocation be forwards, let the Patient lie on his Back, and put one Girth above the Knee, and another above the Juncture of the Foot, and put the Knee into its place with your Hands, or a Coul-staff with a bunch in the midst. If your Hands are not strong enough, you may make use of Pullies; when the Leg is well reduced, the Patient can bend or extend, or make use of it in any manner without Pain.

If the *Tibia* be luxated on one side when the Extension is made, bring the Head of the Bone into its place, with your Hands or a Coul-staff with a bunch in the midst, the Patient lying on a Table during the Operation.

If the lesser Focil be luxated in its upper part, you may thrust it into its place with your Hand.

THE DRESSING in these Dislocations, is the same as in a Fracture of the *Rotula*.

THE CURE. Let the Patient keep his Bed with his Leg extended, and laid in Junks. After some time, let him stir it a little to prevent the Coalition of the Bones, and during the Cure, let them use a good Nourishing Diet.

C H A P. LXXXIII.

Of the Luxation of the Bones of the Foot.

THIS Operation is a Reducing the luxated Bones into their Natural place.

THE CAUSE of this Dislocation, most commonly is some Wrench.

THE SIGNS. If the Juncture of the *Astragalus* with the *Tibia* be separated, is a Rising occasioned by the Bone. If the *Astragalus* be slip't inwards, the Soal of the Foot is turned out; and if it be dislocated outwards, the Soal is turned in. If it be slip't in, the great Tendon implanted into the Heel, is almost quite hid in the Foot.

The Bones of the *Tarsus* and Foot are dislocated diverse ways, all which appear by the prominences and depressions.

The O P E R A T I O N.

If the *Tibia* and the lesser Focil are separated, put them into their place with your Hand, in the best manner that you can.

You may reduce the *Astragalus* by drawing, and forcibly thrusting the Foot to that part opposite to that from whence it slip't.

If the Bones of the *Tarsus* are slip't upwards, let the Patient set his Foot on a Table or the Floor, and then thrust the Bones into their place; if the Prominence be below or on one side, you must in the same manner thrust the Bone into its place.

If the Bones of the Toes are dislocated, they must be reduced in the same manner as all the other Bones after a due Extension made. Upon the whole Matter in these and the like Matters, good Sense with some Experience goes farther, than all the Instructions which can be delivered in Books.

THE DRESSING and CURE are the same as in simple Fractures of the Foot.

R E M A R K S.

The *Tarsus*, *Metatarsus*, and Toes are Cartilaginous in a Fetus

Fœtus in the Womb on the third Month, and about that time the *Metatarsus* is Ossified.

In the fourth Month the Bones of the *Metatarsus* are entirely formed, and the ossification of the Bones of the *Tarsus* begins to appear by several small bloody Spots. In the same Month the upper and lower Juncures of the Toes of the Foot are distinguished by several white Spots, and those in the middle are Cartilaginous.

In the fifth and sixth Month, the second Rank which is next the Thumb is ossified. In the seventh and eight Month the two Fingers next the Thumb are ossified in the middle. In the ninth Month the rest of the Fingers are ossified likewise.

From the fourth to the ninth Month, the Bones of the Foot gradually encrease. In the eighth Month the *Calcaneum* grows bony, and in the same Month the *Astragalus* is bony likewise, and there appears a Division in the *Tarsus*; but in the ninth Month the Juncures are very apparent.

Fab. Hildanus, Cent. 2. Obs. 67. relates, that a Robust Fellow leaping over a Ditch, wrencht his Leg in that violent manner, that he burst the Ligaments together with the Skin, and the *Astragalus* was dislocated, which the Surgeon perceiving to hang by some Fibres only, took off.

F I N I S.



BOOKS lately Printed.

Gentleman's Dictionary. In three Parts, (*viz.*) 1. The Art of Riding the Great Horse; Containing the Terms and Phrases used in the Manège, and the Diseases and Accidents of Horses: 2. The Military Art; Explaining the Terms and Phrases used in Field or Garrison, the Terms relating to Artillery, the Works and Motions of Attacks and Defence, and the Post and Duty of all the Officers of the Army: Illustrated with Historical Instances taken from the Actions of our Armies. 3. The Art of Navigation; Explaining the Terms of Naval Affairs, as Building, Rigging, Working and Fighting of Ships, the Post and Duty of Sea-Officers, with Historical Examples taken from the Actions of our Fleet: Each part done Alphabetically from the Sixteenth Edition of the Original *French*, Published by the *Sieur Guillet*, and Dedicated to the *Dauphin*; with large Additions, Alterations, and Improvements; adapted to the Customs and Actions of the *English*, and above 40 curious Cutts that were not in the Original.

The Compleat Surgeon, or the whole Art of Surgery explained in a most familiar Method; Containing an exact account of its Principles, and several Parts, (*viz.*) Of the Bones, Muscles, Tumors, Ulcers and Wounds, Simple and Complicated, or those by Gunshot; as also of Venereal Diseases, the Scurvy, Fractures, Luxations, and all sorts of Chirurgical Operations. To which is added, A Chirurgical Dispensatory, shewing the manner how to prepare all such Medicines as are most necessary for a Surgeon, and particularly the *Mercuria Panacea*. Written in *French* by *Monsieur Le Clerc*, Physician in ordinary to the *French King*, and faithfully Translated into *English*; the 3d Edition, enlarged by the Author, with the excellent Method of preparing the Brain, by that Dextrous and Learned Anatomist, *M. Duncan*, and with many Judicious Remarks, and new Chirurgical Machines of the Invention of the Ingenious and Skilful *M. Arnaud*. 120.

A Description of Bandages and Dressings, according to the most Commodious Ways now used in *France*: Written in *French* by *M. Le Clerc*, Physician in Ordinary to the *French King*, and Author of the *Compleat Surgeon*. Translated into *English* with forty eight Copper Plates, Representing the Figures of several parts of each Dressing. In 120.

The Anatomy of Humane Bodies improv'd according to the Circulation of the Blood, and all the Modern Discoveries publicly Demonstrated at the Theatre in the Royal Garden at *Paris*, by *Monsieur Dionis*, Chief Surgeon to the late *Dauphiness*, and to the present Dutchess of *Burgundy*; Translated from the third Edition, Corrected and Enlarged by the Author, with an ample Dissertation upon the Nature of Generation, and several new Systems, with Figures of all the parts of the Body, and an useful Index of the Principal Matters.

An Explanation of the Figures of
the following Tables, which con-
tain the Compound Bandages,
Sutures, and some other Ma-
chines used in the Practice of
Surgery.

T A B. I.

Fig. 1. **R**epresents a Roller with one Head, or rolled
up at one end only.

Fig. 2. A Double-headed Roller.

Fig. 3. A Sling or Fillet with four Tails; This is very
useful for the keeping Applications on the Eyes, Nose,
upper Lip, and in short, on all parts of the Head, and
Perinæum of Persons cut for the Stone.

Fig. 4. A Sling with six Tails, which may be applied on
the Ears, though one with four is sufficient.

Fig. 5. Represents an Emplaster made in form of a Cres-
cent to be applied behind the Ears, which is adapted as
all Emplastres ought to be, to the Figure of the part.

Fig. 6. A false Tent in which a Lancet is conceal'd, for
the letting out Pus lodged under the Dura Mater. A
Tent of the like Figure made for drying up that which
lies on the Membrane, but without a Lancet in
it.

Fig. 7. A Syndon of fine Linen, which is to be wetted
with some Spirituous Liquor, and laid on the Dura
Mater, after Trepanning the Skull.

Fig. 8. Is another Syndon made of Lint, which some
Practi-

An Explanation of the Figures.

Practitioners wet with some Spiritous Liquor, and lay over the former.

Fig. 9. *Are small Pledgits of Lint, which are to be arm'd with proper Medicines, and put into the perforation.*

Fig. 10. *A Pledgit of dry Lint put into the Hole of the Skull.*

Fig. 11. *Dossils which are to be arm'd with proper Digestives, for the filling up the Lips of the Wound.*

Fig. 12. *A large Pledgit arm'd with some proper Digestive to lay over the Dossils.*

Fig. 13. *A large Emplaster of Betony, to cover the whole.*

T A B. II.

Fig. 14. *A large square Compress several times doubled to cover the rest.*

Fig. 15. *A Napkin folded for the making the great Cap for the Head, and which are the Dressings used in the Operation of Trepanning.*

Fig. 16. *The Napkin folded as it ought, for the keeping Applications on the Eyes, and all other parts of the Head. This is not, however so convenient after Trepanning as the Great Cap, because it is not so certain, and do's not keep the Part so warm.*

Fig. 17. *Is a small Machine of Steel Wire, to keep the Applications on the Part after the Operation of the Fistula Lachrymalis. These Wires are usually Steel, but common Iron Wire is preferable for the convenience of the Surgeon, that he may adapt them to the Part, when there is no Workman at hand to do it.*

Fig. 18. *Is the Accipiter or Hawk, to keep Applications on the Nose. This is but an Amusement, the Fillet with your Tails being more useful in this case.*

Fig. 19.

An Explanation of the Figures.

- Fig. 19. *A Triangular Emplaster to be laid on the Nose. The Past-boards applied on the side of the Nose when it is Fractured or Luxated, must have the same Figure.*
- Fig. 20. *Is an Emplaster for the upper Lip, the two Branches of which are to be applied on the side of the Nose.*
- Fig. 21. *Is the Mask used in Burns of the Face.*
- Fig. 22. *Is the Compress and Past-board which is to be applied on the lower Jaw, when there is a Fracture and Luxation on one side only, and this Compress must be stitched to a Past-board.*
- Fig. 23. *Is the Compress and Past-board to be applied, when there is a Fracture or Luxation on both.*
- Fig. 24. *Is the Trapezial Emplaster for the Chin.*

T A B. III.

- Fig. 25. *A Semicircular Emplaster for the Chin.*
- Fig. 26. *The Bandage of Heliodorus for one Breast.*
- Fig. 27. *Heliodorus's Bandage for both Breasts.*
- Fig. 28. *The Emplaster, Past-board, and Compress for the Sternum. This is called Scutum.*
- Fig. 29. *The Compress and Past-board for a Fracture of the Ribs.*
- Fig. 30. *A great Capped Tent put into deep Wounds to hinder the Coalition.*
- Fig. 31. *An Emplaster in form of a double T, to be laid on the Cartilago Mucronata.*
- Fig. 32. *An Emplaster and Compress for the Joints, as the Arm or Leg. This Figure is proper for the adapting it to the Part.*
- Fig. 33. *Is a Bandage for Issues, which is very convenient, because the Patient can dress them himself.*

T A B. IV,

- Fig. 34. *An Emplaster and Compress for the Metacarpus.*

An Explanation of the Figures.

- Fig. 35. *A simple T for a small Joynt, as the Fingers, when the Surgeon likes it better than the +.*
- Fig. 36. *Is a small Machine made of Wire, to prevent the Guts from protruding themselves into the Groin and Navel. This must be lined, and is more convenient than a Steel Truss, because it yields to the Motion of the Belly.*
- Fig. 37, and 38. *are Steel Trusses, one for the Right, and the other for the left Groin. These are best made of Iron, that the Surgeon may manage them better, when he has no Workman to assist him. They are drawn without any Lining, to shew their Figure.*
- Fig. 39. *Is a Truss made of Dimetty for the Groins in Children, and Adult Persons, when the Descent of the Guts is recent, and not very considerable. There is no more than one Knob required, when the Rupture is only on one side.*
- Fig. 40. *A Bandage for the Groin.*
- Fig. 41. *A Triangular Emplaster and Compress for the Groin.*

T A B. V.

- Fig. 42. *The Common Truss for both sides.*
- Fig. 43. *The Common Truss for one side only.*
- Fig. 44. *The Suspensory of the Napkin which goes round the Breast. The midst of this is put about the Neck, and falls on the Shoulders.*
- Fig. 45. *Is a suspensary for the Scrotum, two Straps of which cross below, and going up are fastened to the Waistband.*
- Fig. 46. *A Contentive Bandage, to keep Applications on the Buttocks.*
- Fig. 47. *An Emplaster whose indented part passes between the Buttocks in a Fistula in Ano.*
- Fig. 48. *Is a small Case pierced at the End for the passage of the Urine, without removing the Dressings. The Tard is put into this Case, as well for the suspending it*
in

An Explanation of the Figures.

in involuntary Erections, as in a Heat of Urine or Priapism, as to keep on the Dressings.

T A B. VI.

Fig. 49. *A narrow Fillet with a Hole at one end, and a slit at the other, for a contentive Bandage of the Yard.*

Fig. 50. *A Bag for the Cods. This is very convenient, because the Yard not being put into it, a Man may lie with his Wife. This is fastned by two small Tapes to the Waist-band.*

Fig. 51. *Is a T whose lower Tail is cut short. This is adapted to the keeping Applications on the Perinæum; the upper Strap goes round the Waist, and the lower are fastned to that.*

Fig. 52. *Is a single T. for the Perinæum and Anus.*

Fig. 53. *Is a Collar to keep on the sling applied to the Perinæum, after cutting for the Stone.*

Fig. 54. *Is a Figure with four Tails, or the Sling mentioned.*

Fig. 55. *Is the Emplaster in form of a Greek U laid on the Perinæum.*

Fig. 56. *Another Emplaster for the Perinæum.*

Fig. 57. *An Emplaster in form of a Horse-shoe for the Womb.*

Fig. 58. *A Pessary of Cork perforated in the midst, to support the Womb when it falls out.*

T A B. VII.

Fig. 59. *Is a Cross, or the form of an Emplaster to be laid on Stumps after Amputation.*

Fig. 60. *Is another Figure for the same purpose.*

Fig. 61. *Is the Bandage with 18 Tails, for Complicate Fractures.*

Fig. 62.

An Explanation of the Figures.

Fig. 62. *Junks for the Leg and Thigh in Compound Fractures.*

Fig. 63. *A Past-board to keep the Foot streight.*

T A B. VIII.

Fig. 64. *A small Quilt stitched to the Past-board, for the ease of the Foot.*

Fig. 65. *A small Roll for the supporting the Heel.*

Fig. 66. *An open Stocking us'd in Burns and Scalds of the Legs.*

Fig. 67. *The continued Suture or Glovers Stitch, used in Wounds of the Guts and Scrotum.*

Fig. 68. *The interrupted or separate Stitch, used in the re-uniting Transverse Wounds, when Bandage alone is not sufficient.*

Fig. 69. *The twisted Suture used in Hare-Lips.*

Fig. 70. *The Dry Stitch.*

T A B. IX.

Fig. 71. *The Pin Stitch.*

Fig. 72. *The Quill Suture. This differs very little from the former, the Antients sometimes using Pins, and sometimes Quills to lay on the edges of the Wounds, and make their knots on, but both are useles.*

Fig. 73. *The Wire-Stitch. These are Wires made Circular, with which some have proposed to keep together the Edges of a Wound, but it is very Whimsical, and never to be done, because of the great Pain and Inflammation which must necessarily follow.*

Fig. 74. *The Shoemakers Stitch. This creates a great deal of Pain, and for that Reason must never be made.*

T A B. X.

Fig. 75. *Is the Scabbard-makers Stitch, as in lacing.*

Fig. 76.

An Explanation of the Figures.

Fig. 76. *The Stitch from within outwards, and that from without inwards, which is never to be made, because the Threads enter the Wound, and hinder its re-union.*

Fig. 77. *Is Celsus's Suture or the X, which is never to be made, for the same Reason as the former.*

Fig. 78. *Represents the manner of Stitching the Tendons.*

T A B. XI.

Fig. 79. *The Stitching of a Wound with one Angle.*

Fig. 80. *The manner of Stitching two Wounds, one of which is lengthways, and the other Transverse with one Angle. The Transverse is united by the help of the separate Stitch, and the Longitudinal by the uniting Bandage.*

Fig. 81. *The manner of Stitching a Longitudinal and Transverse Wound, making two Angles. The Transverse is to be united by help of the separate Stitch, and the Longitudinal, by the uniting Bandage, and the two Angles with two Stitches and a knot.*

Fig. 82. *The Separate Stitch, this is only made in short Wounds.*

T A B. XII.

Fig. 83. *The Suture when there is four Angles. This is made with two Stitches and one knot.*

Fig. 84. *The Ligature of an Artery, after the Operation of an Aneurism.*

Fig. 85. *The Operation of a Fistula in Ano. The Bags on each side represent the Fistula; in one of these is a Probe bent for the drawing it, and the more easie cutting it with a pair of Scissars.*

Fig. 86. *The Amputation of a Leg with all the Dressings, the Ligatures above and below the Knee, the Past-board under the upper Ligature, which keeps the Part from*

An Explanation of the Figures.

from being pinched; the Longitudinal Compress on the Ham, and along the Stump, which is kept on by two Ligatures, and the Ligature of the Artery, which is at the end of the Stump.



IX. A. B. C.

X. A. B. C.

Plate the first.

Plate the first.

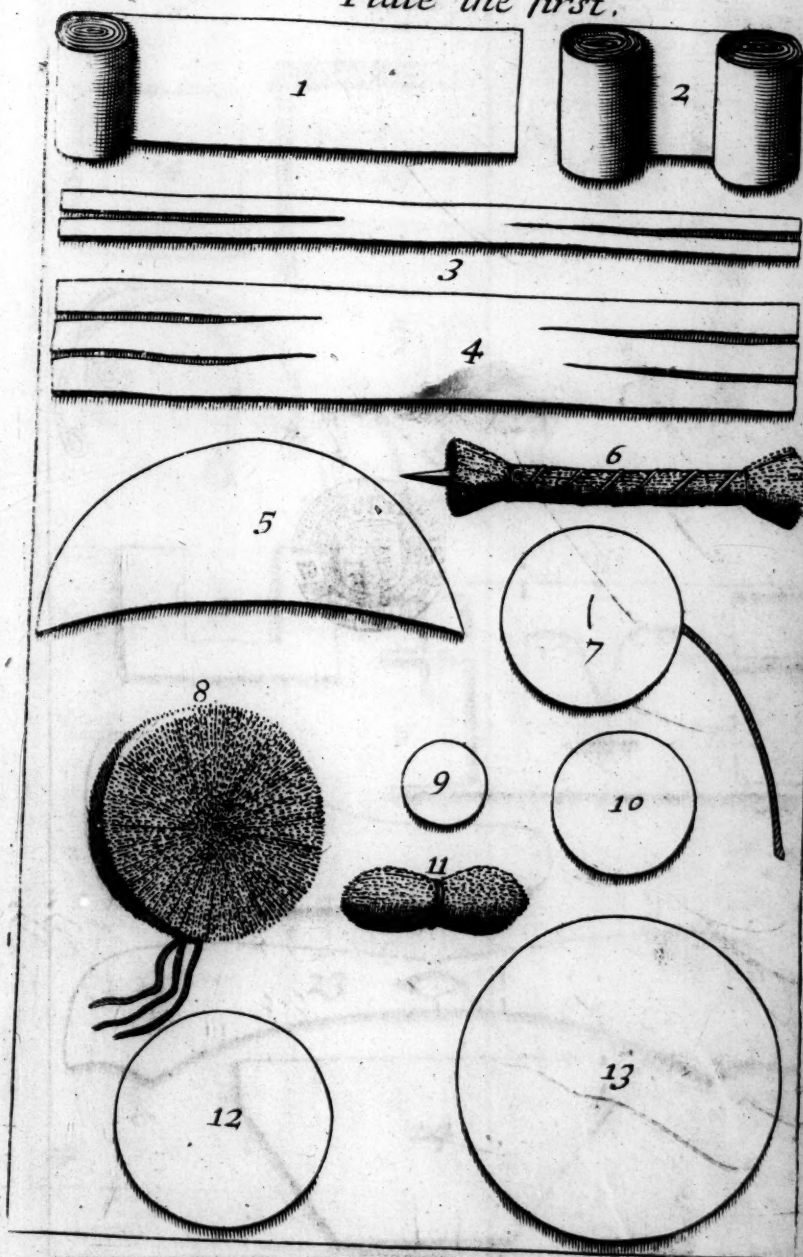


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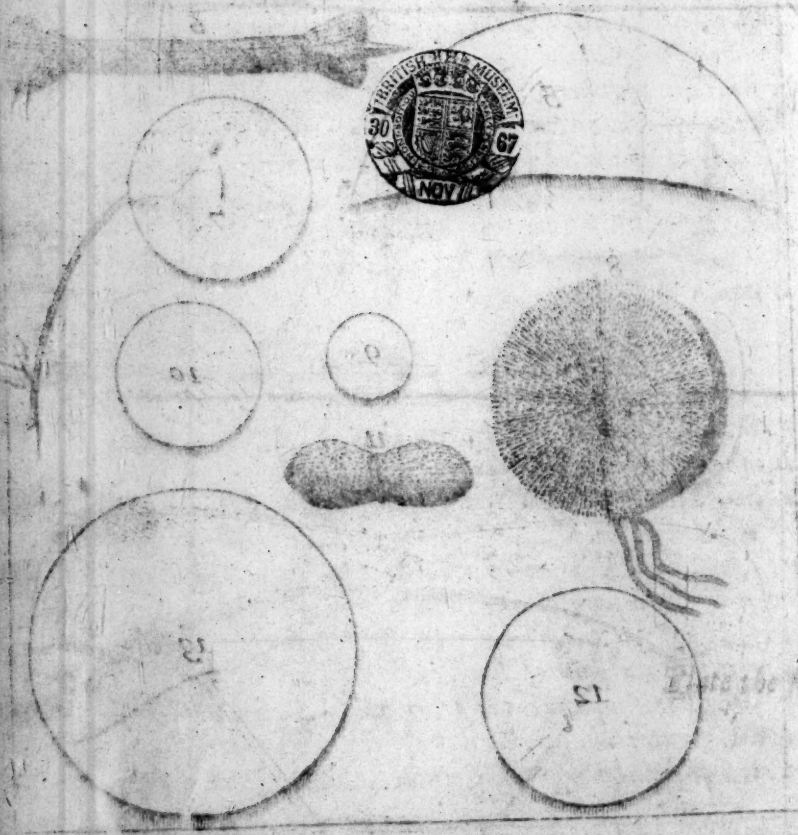
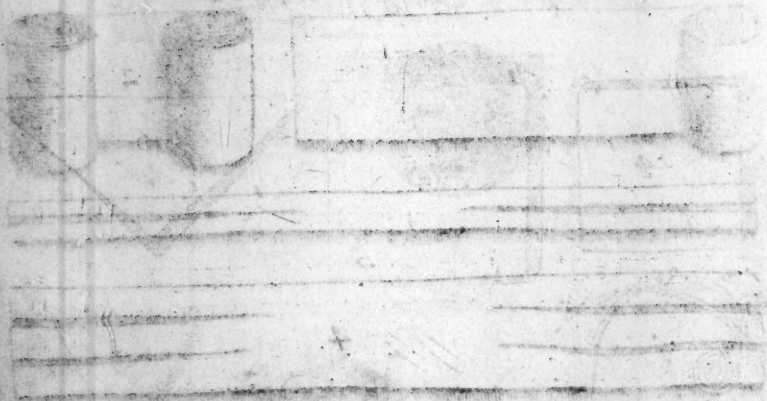
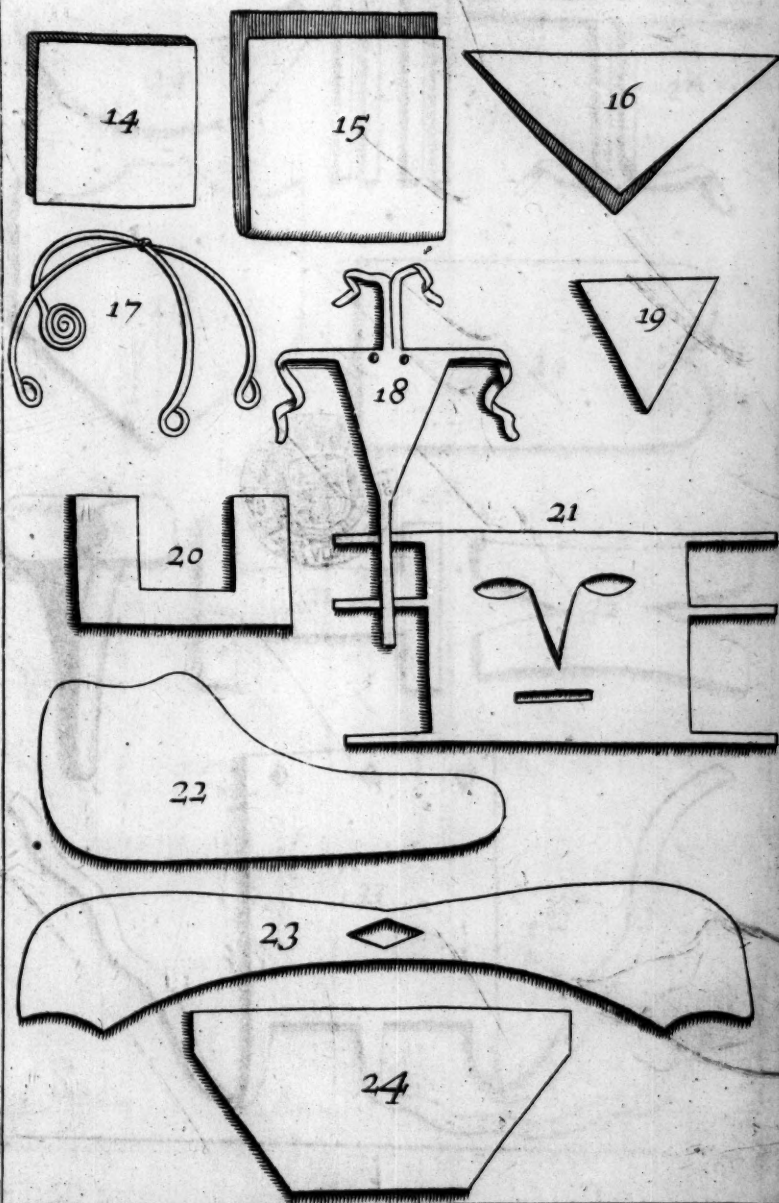


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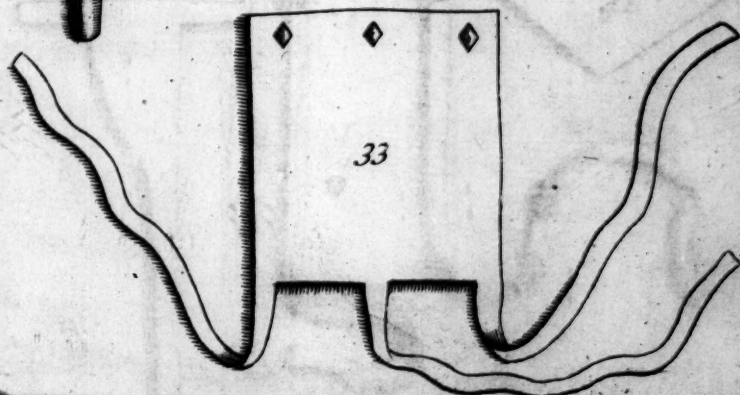
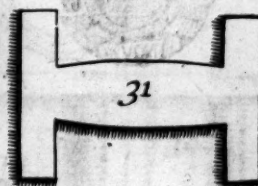
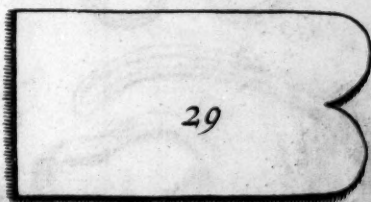
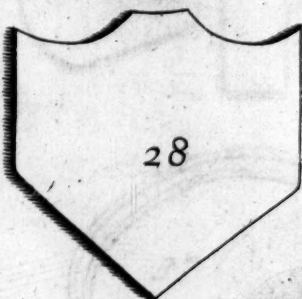
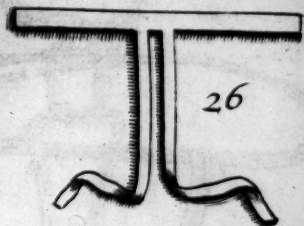


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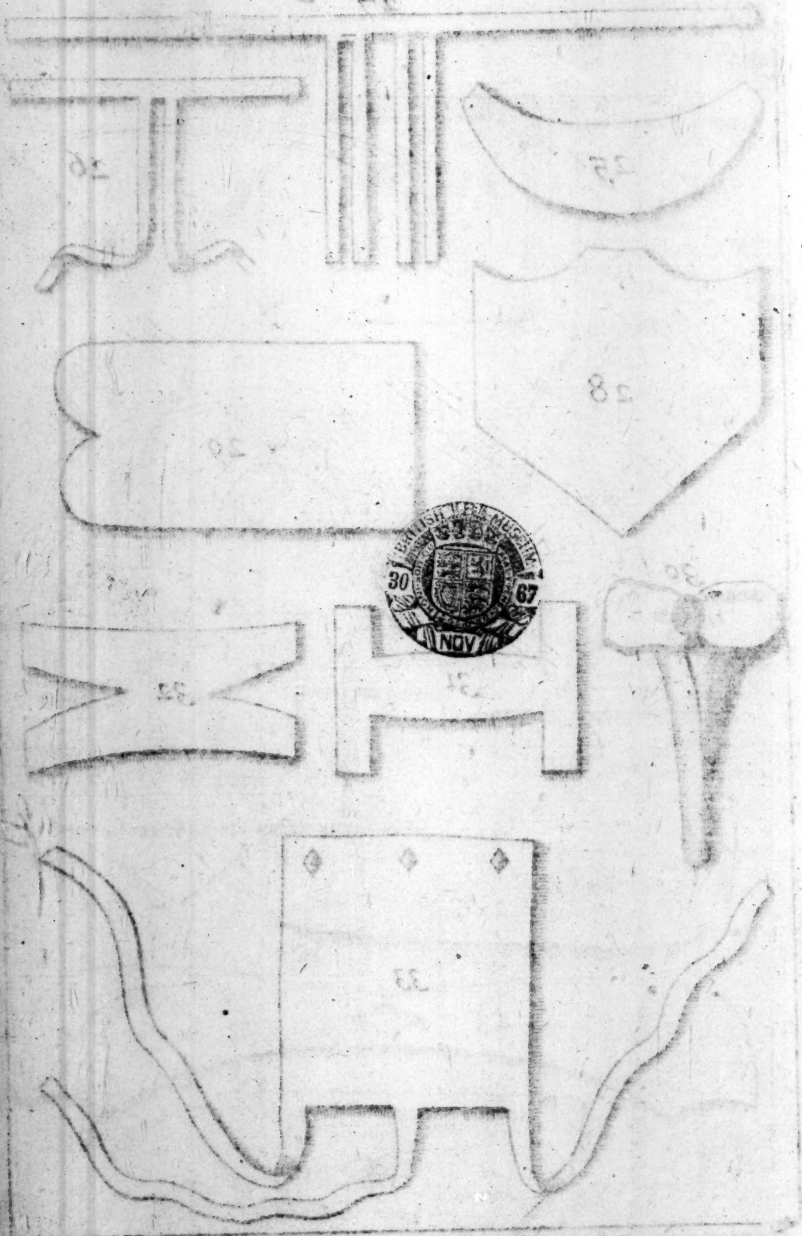


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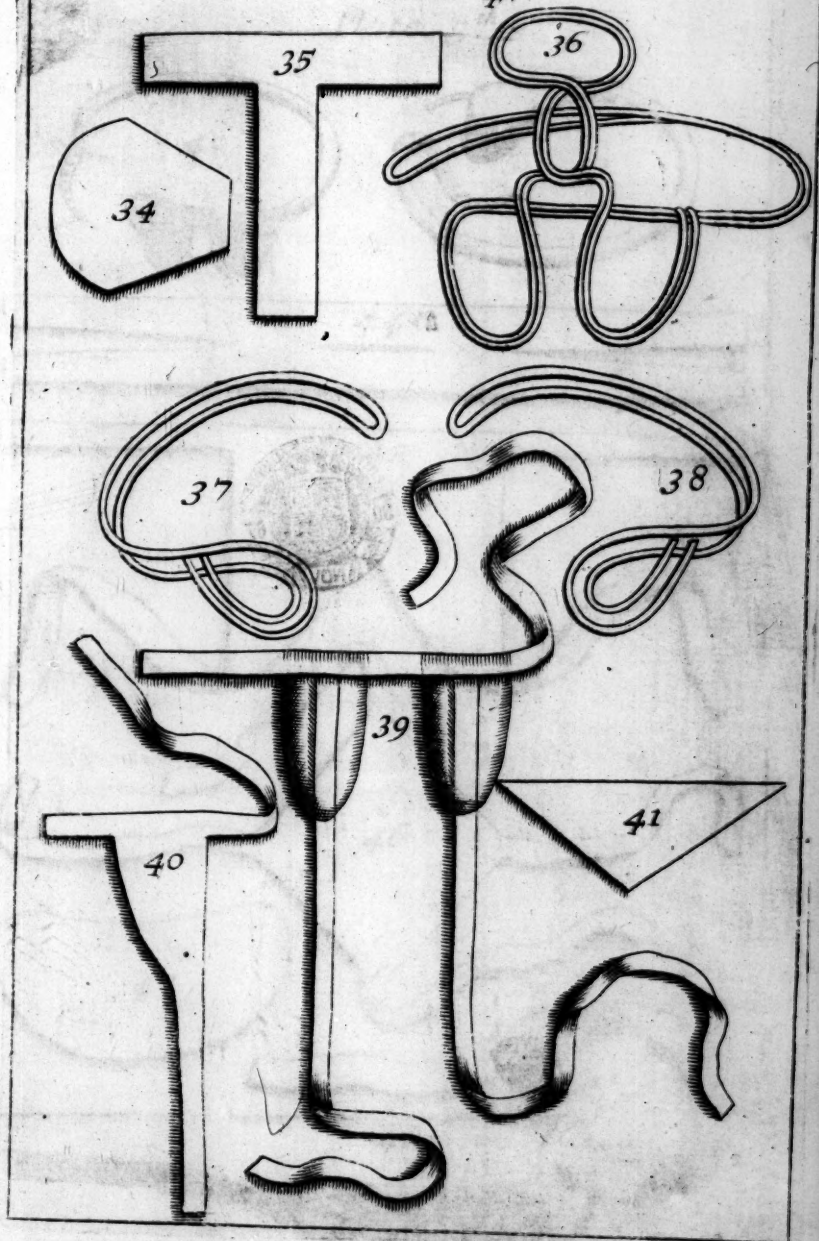


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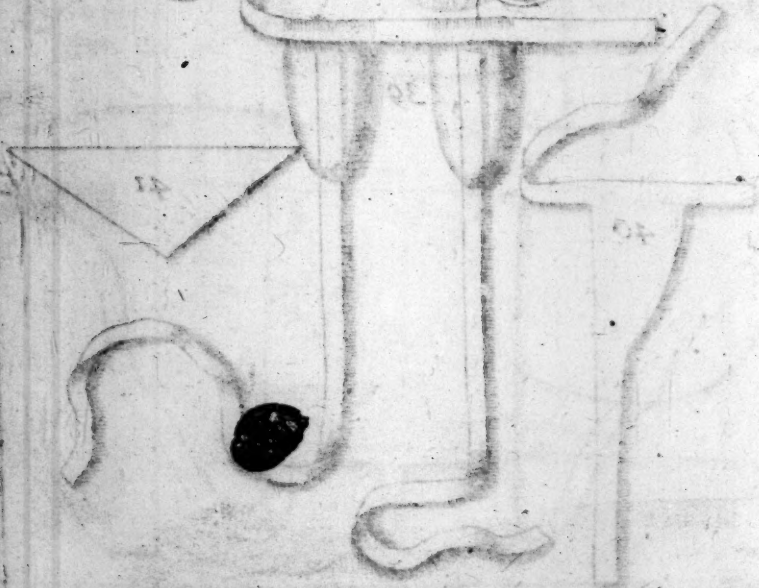
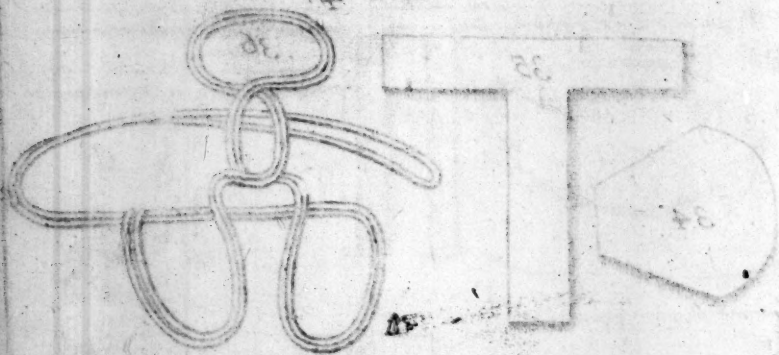
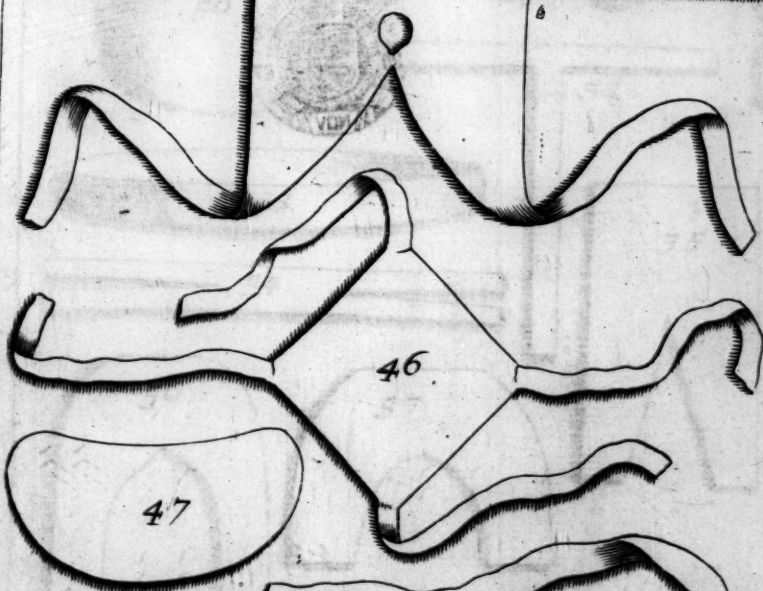
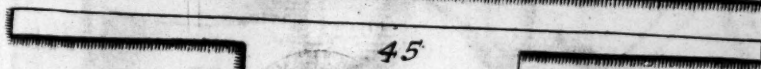


Plate 5th





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Plate 6.th

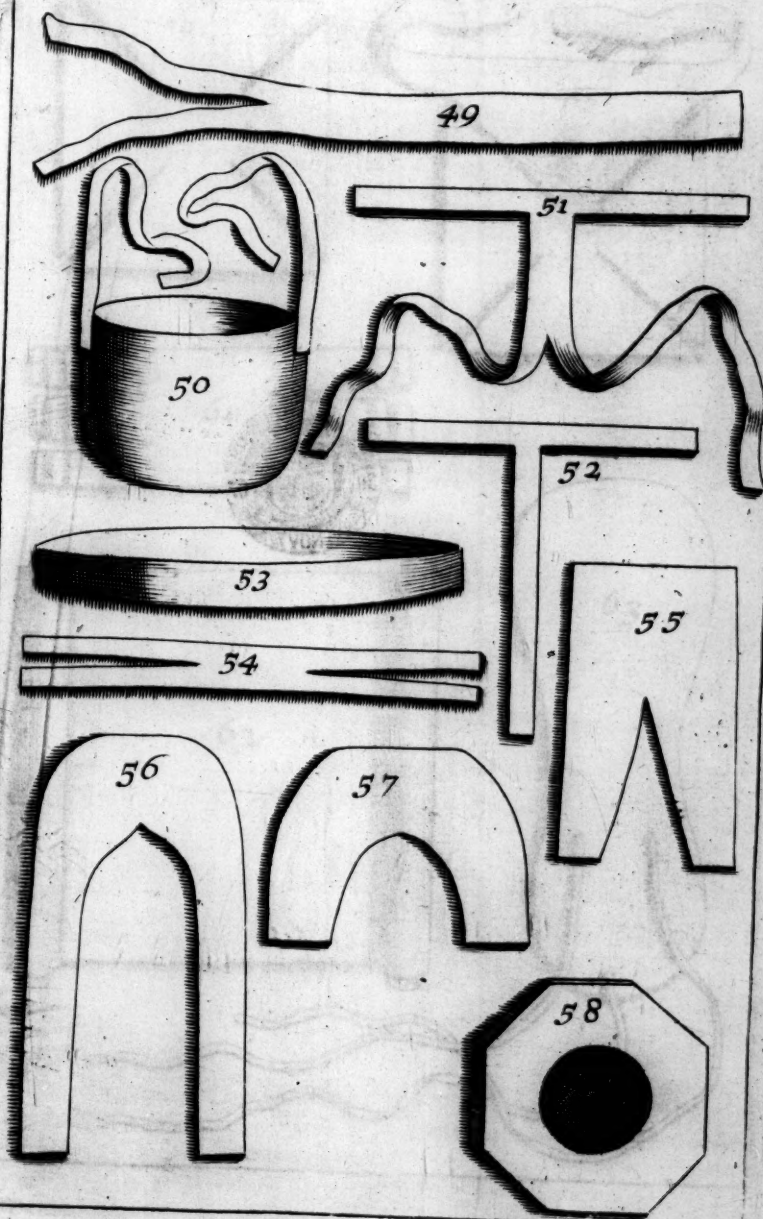


PLATE 67

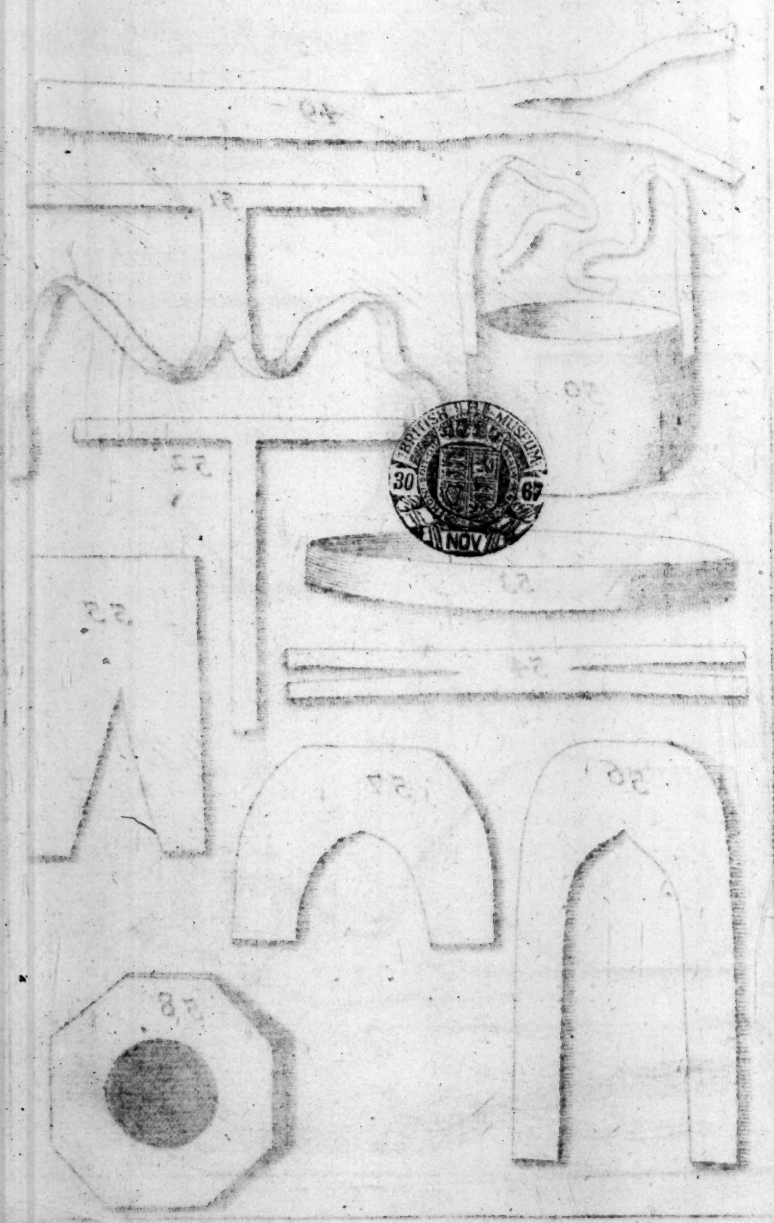
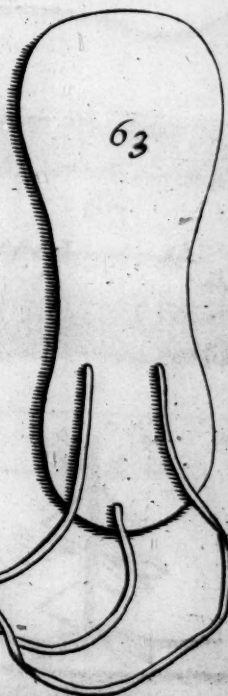
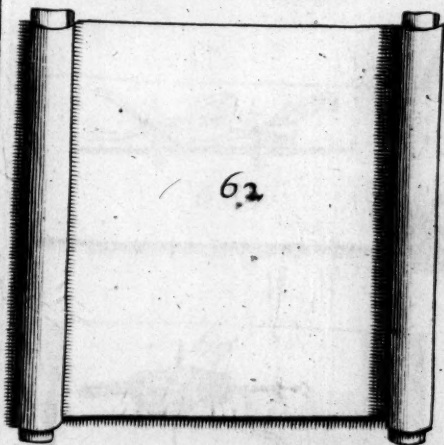
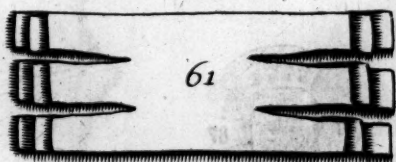
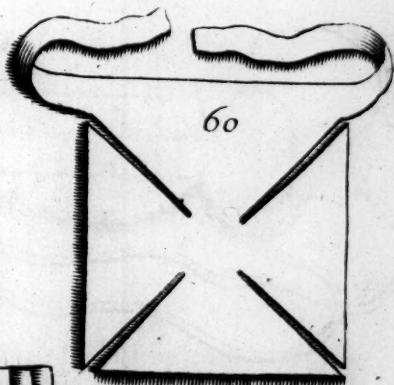
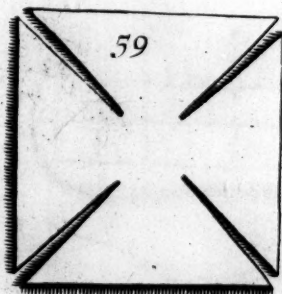


Plate 7.th



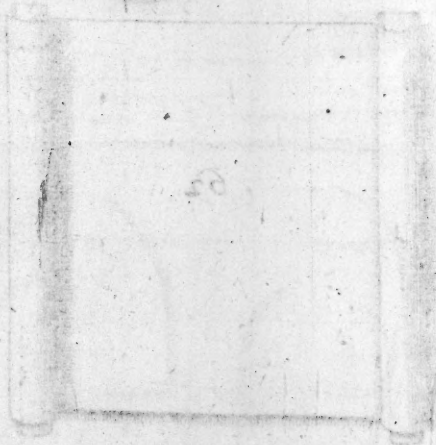
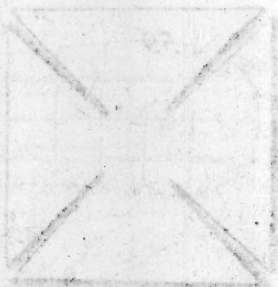
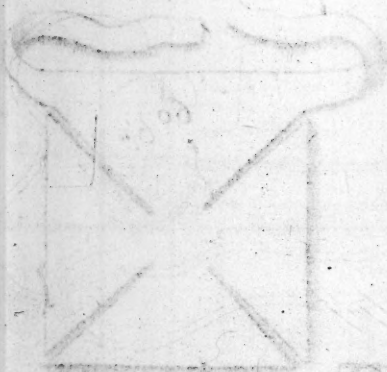
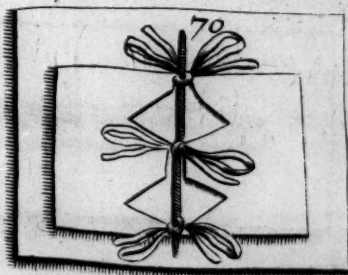
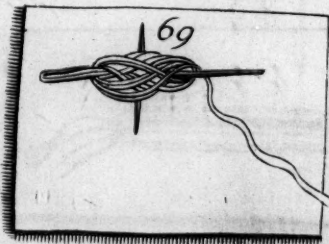
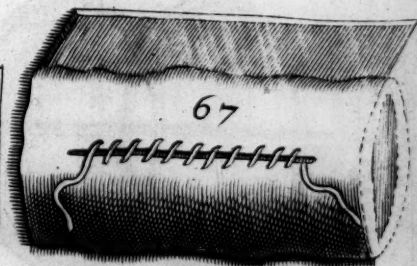
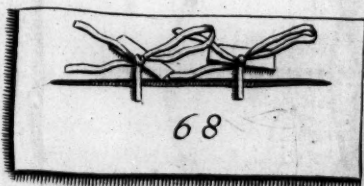
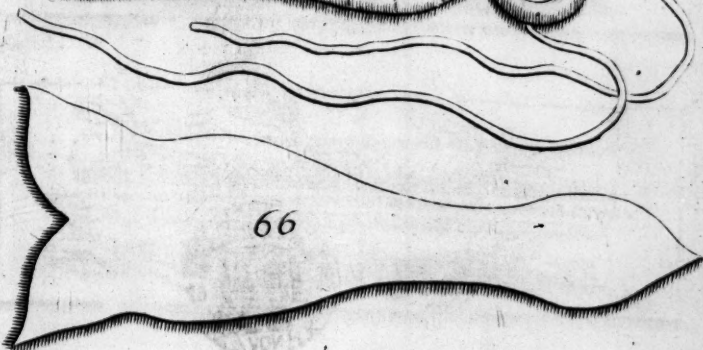
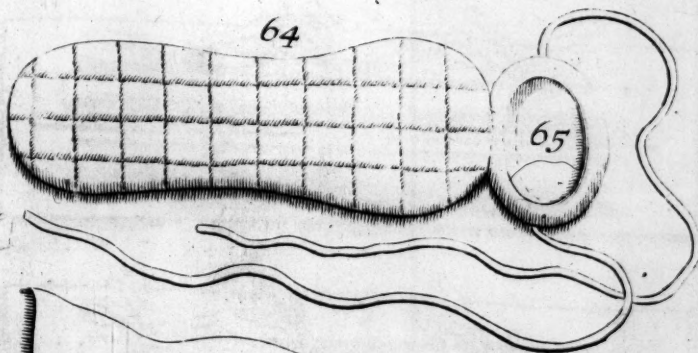


Plate 8.th



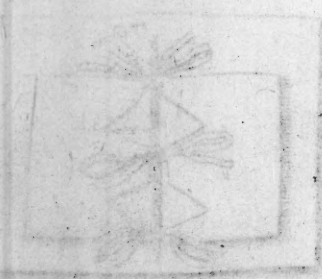


Plate 9.th

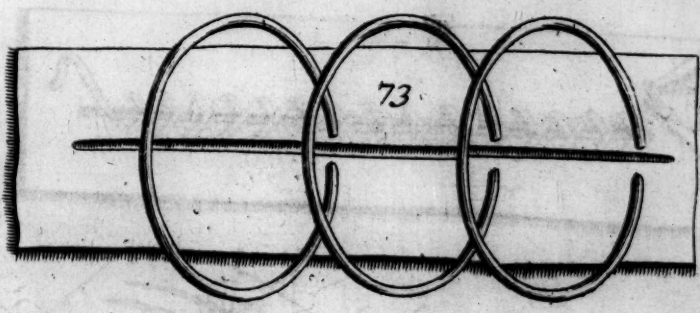
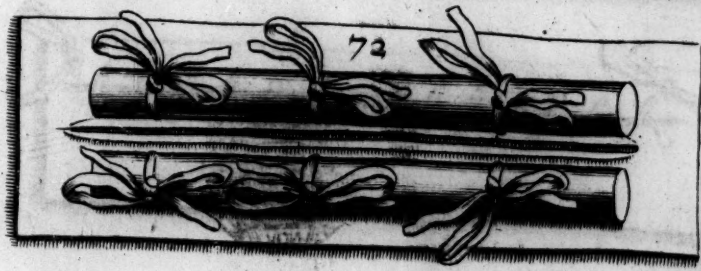
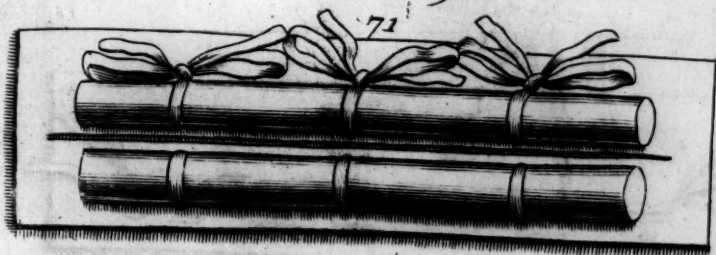


Plate 9.

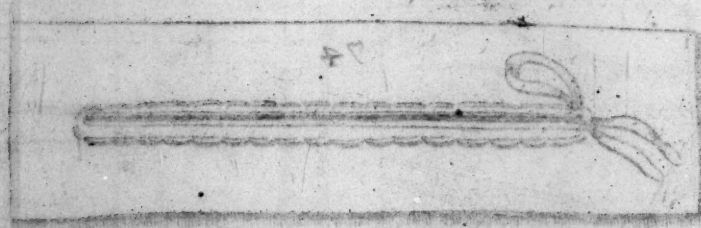
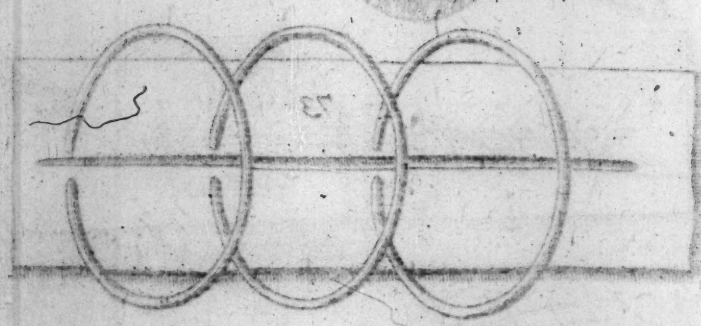
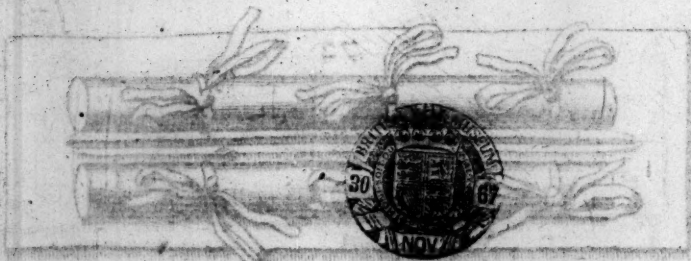
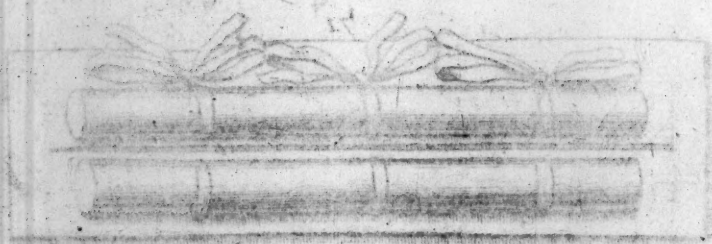


Plate 10th

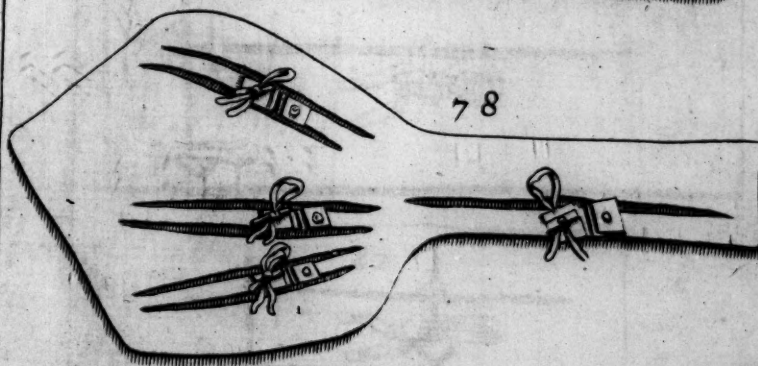
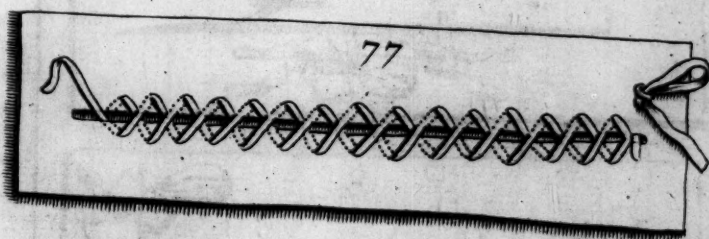
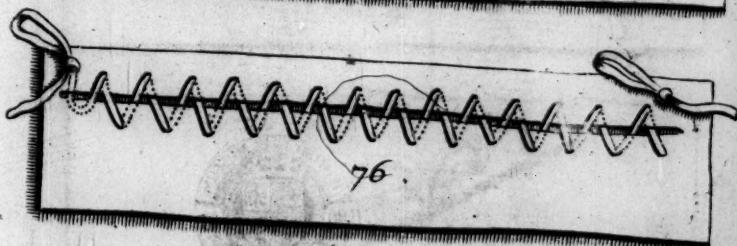
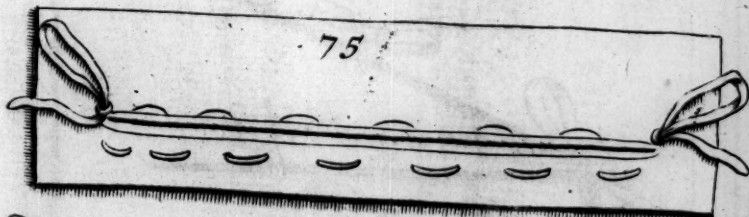


Fig 10

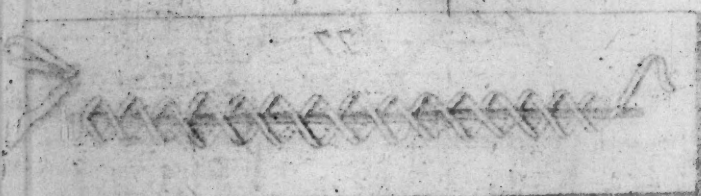
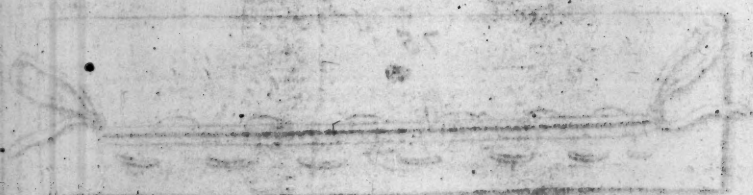


Fig 11

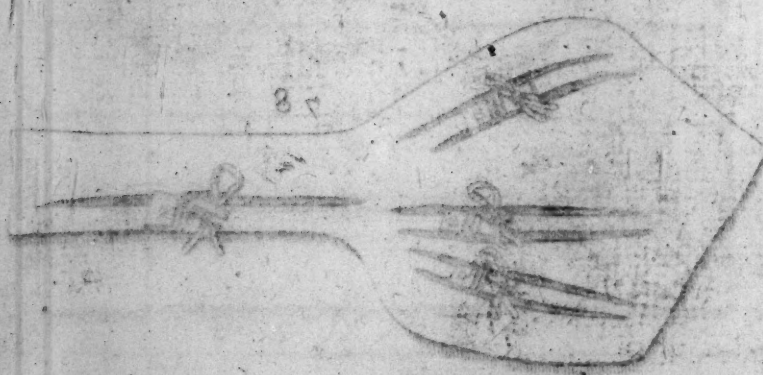


Plate 11.th

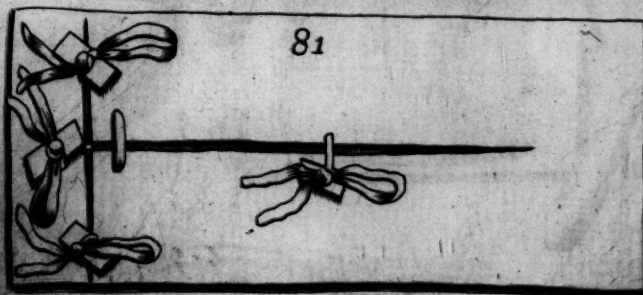
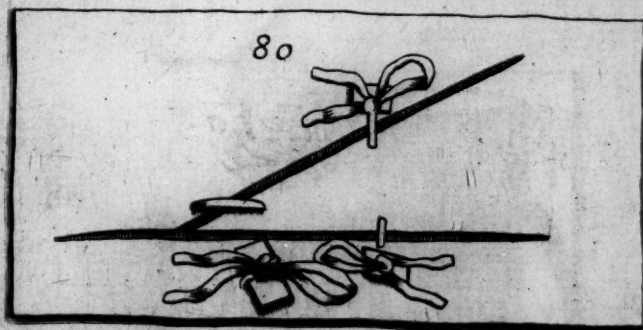
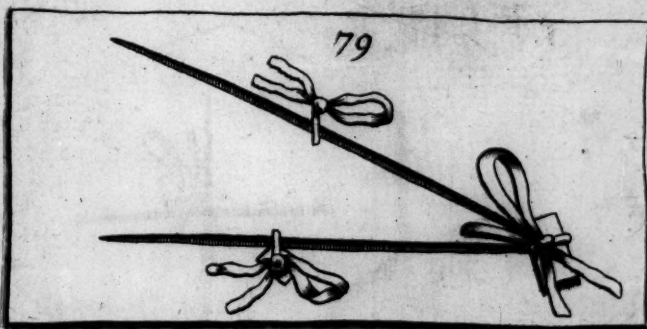


Plate III

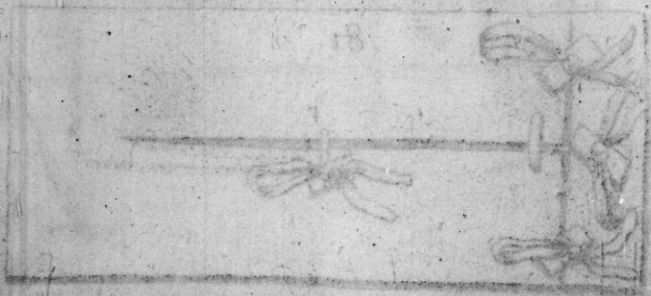
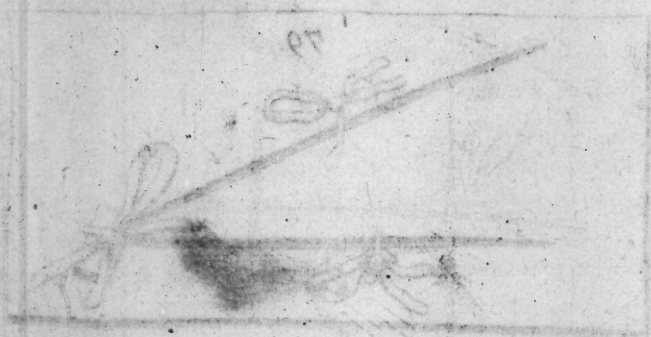


Plate 12.th

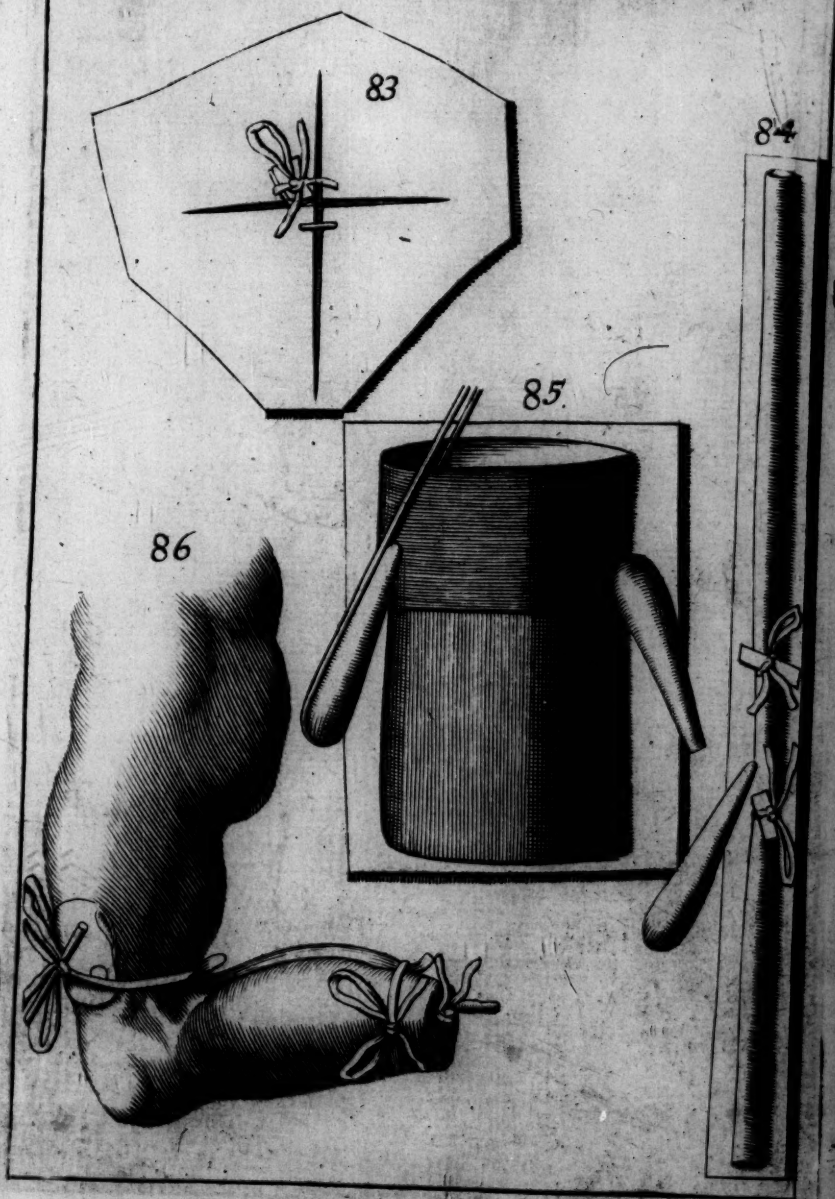


Plate 10.



